ARCHEOLOGICAL RESEARCH SERIES NUMBER SIX

SEARCH FOR THE
CITTIE OF RALEGH

ARCHEOLOGICAL EXCAVATIONS AT FORT RALEIGH NATIONAL HISTORIC SITE

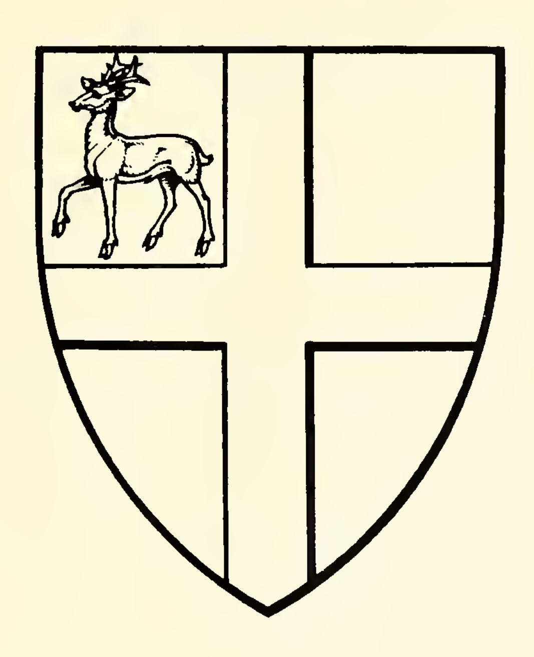
NORTH CAROLINA

NATIONAL PARK SERVICE • U.S. DEPARTMENT OF THE INTERIOR



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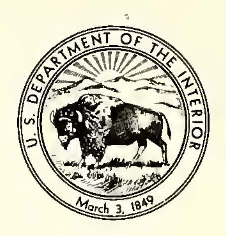
By Jean Carl Harrington

ARCHEOLOGICAL RESEARCH SERIES NUMBER SIX

NATIONAL PARK SERVICE, U.S. DEPARTMENT OF THE INTERIOR, WASHINGTON, 1962

United States Department of the Interior
Stewart L. Udall, *Secretary*

National Park Service
Conrad L. Wirth, *Director*



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NATIONAL PARK SERVICE

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The National Park System, ***of which Fort Raleigh National Historic Site is a unit, is dedicated to conserving the scenic, scientific, and historic heritage of the United States for the benefit and inspiration of its people.***



Foreword

Archeology is so often identified with distant lands and ancient civilizations, or with the prehistoric past of our own country, that many persons are surprised to find it applied to the remains of our own colonial and national heritage. Yet the results which have been, and are being, achieved throughout our country in the relatively new field of historic site archeology add immeasureable depth and human interest to the study of our history.

The remnants of structures, although incomplete and fragmentary, and the actual objects of the times, although broken and disfigured, provide important physical links to the past. In a scholarly and scientific sense they teach us much that no observer of the times bothered to write down. For the average citizen and visitor to a historic site, they give new meaning and life to the past.

The National Park Service is proud of its pioneering role in the application of archeology to historic sites in the United States. Intensive work of this sort really began at Jamestown in 1934. In the years that have followed many projects have been carried out at many areas administered by the Service. And the idea has spread to other agencies and institutions at the state and local level. Each year sees a substantial amount of work carried out across the span of the United States. We like to think that the impetus for much of this work stems from the example set by the early work of the National Park Service.

The author of the present report has been associated with the development and growth of historic site archeology in this country almost since its inception. The work reported here, carried on at intervals from 1947 to 1953, represents all that we now have learned through archeology of the ill-fated settlement on Roanoke Island and suggests the directions which future work should take. Much yet remains to be done. Probably archeology will never solve the mystery of "Croatoan," but it has already provided us with tangible evidence of the earliest English colonizing attempt within the limits of the continental United States.

Conrad L. Wirth

Director

Preface

An area of a little over 16 acres, containing the traditional site of the "Cittie of Ralegh," the 16th-century English settlement on the upper end of Roanoke Island in North Carolina, was designated Fort Raleigh National Historic Site on April 5, 1941.* For nearly 50 years prior to this, the site had been protected and interpreted, first by a private association and later as a state park.† Fame and a greater public appreciation of this historic spot had come with the production of Paul Green's *Lost Colony*, presented annually, except during the war years, since 1937.

World War II delayed research and development by the National Park Service, but in 1947 funds became available for limited archeological explorations. The work was continued in 1948 and essentially completed in 1950, along with the reconstruction of the earthen fort. Some additional testing was done in 1953 in connection with the development of the Elizabethan Garden on adjoining property. The present report is a formal record of the results of the four periods of field work, including the fort reconstruction.

Shortly after completing the first two seasons' explorations, a condensed report was published in the *North Carolina Historical Review* (Harrington, 1949), which was to be followed by a "final" comprehensive report upon completion of the full exploration and reconstruction work. About this time, Professor David B. Quinn, then at the University of Wales in Swansea, was engaged in detailed studies of the English expeditions to Roanoke Island, culminating in a definitive two-volume publication by the Hakluyt Society (Quinn, 1955). This publication also carries a fairly complete description of the archeological discoveries and their interpretation (pp. 901–910).

Soon after the final excavation of the earthen fort in 1950, Dr. Charles W. Porter III, prepared the manuscript on Fort Raleigh National Historic Site, published in 1952 in the National Park Service Historical Handbook Series (Porter, 1952). Dr. Porter had done much of the pre-excavation historical research, which was particularly valuable in planning the archeological project and in interpreting the results of the excavating.

The three publications mentioned above, along with several shorter articles (Harrington, 1951, 1952, 1953, 1954, and 1956), contain most of the important results of the explorations. Also more recently available is an analysis and description of aboriginal materials from the site, resulting from Dr. William G. Haag's archeological survey of coastal North Carolina, conducted as part of the special studies by the Coastal Studies Institute of Louisiana State University (Haag, 1958).

On the whole, therefore, the Fort Raleigh archeological explorations of 1947 through 1953 are covered fairly adequately in published sources. These accounts lessened the urgency for a final report by the archeologist, and account in a large measure for its delay. They do not, however, obviate the need for such a consolidated report. For one thing, certain information which might be of some future interest is lacking in these various accounts, as well as the more detailed descriptions of archeological features and excavated objects. Possibly of even greater importance, this body of published material does not furnish a complete narrative account of the explorations and a synthesis of results and interpretations by the excavator himself. The present report, therefore, supplements the abbreviated and scattered published accounts, bringing together in one place a complete record of the Fort Raleigh archeological project carried out by the National Park Service, under the direction of the writer, over the period of 1947 through 1953.

A definitive report covering results of archeological excavations at a historic site would normally include all pertinent documentary information, but not necessarily a detailed historical narrative. Those who might use this report in connection with detailed research on Fort Raleigh will want to consult all available documentary material bearing on the subject. They can now do this with much greater facility with the publication of Quinn's work. For those who may have occasion to use this report in some other connection, only a very brief account is needed for general orientation. Such a condensed narrative is included on pages 1 and 3.

Acknowledgements, on the whole, are being omitted, as there seems little point in listing the names of all the people who cooperated and assisted in one way or another on this project, in view of the time that has elapsed since it got under way in 1947. I am indebted in particular to Professor David B. Quinn for continued assistance and for his critical review of manuscript drafts during the preparation of this belated report; to Albert Manucy for helpful advice on the conjectural reconstruction of the fort and for preparing the frontispiece; to Ivor Noël Hume for assistance in identifying and dating the artifacts; and to Dr. Charles W. Porter III, for encouragement and advice from the very outset of the project.

J.C.H.

*The historic site was increased to 18½ acres with addition of a strip along the east boundary in 1952. Extension to approximately 144 acres was authorized by act of Congress, approved August 17, 1961. In the text and maps of the present report, the terms "National Historic Site" and "historic site" refer to the 18½-acre tract.

†The original tract acquired in 1894 for the preservation of the fort ruins contained 10 acres. In the deed for this sale is the first use, to the writer's knowledge, of the term "Fort Raleigh." The 10-acre tract was referred to as "the old Fort Raleigh Tract" (Record of Deeds, Dare County, Book D:332).

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FIGURE 1—Artist's reconstruction of the fort

Discovery To Reconstruction

HISTORICAL SUMMARY OF EXPLORATION AND SETTLEMENT

Historical summaries of the ill-fated attempts to establish an English colony on Roanoke Island have been written by the score. Rather than produce another version, I will include here sections from the informational folder distributed by the National Park Service at Fort Raleigh National Historic Site.[1]

Exploration of Roanoke Island

In 1583, Sir Humphrey Gilbert, half-brother of Sir Walter Raleigh, staked all that he had in an attempt to found a colony in the northern part of North America. But the venture was not successful, and he himself was drowned on the return voyage to England. The next year, Sir Walter Raleigh, favorite of Queen Elizabeth, received from the Queen a charter for western discovery and colonization.

Imbued with a desire to realize his brother's dream of an English Empire in America, Raleigh sent Captains Philip Amadas and Arthur Barlowe to America in 1584 to select a site for a colony. They explored the North Carolina coast, including Roanoke Island, and returned with a favorable report on the latter-named place, which they described as "a most pleasant and fertile ground." In honor of Queen Elizabeth, the Virgin Queen, the whole country was named Virginia.

The First Colony, 1585–86

Raleigh's first colony, consisting of 108 persons, departed from Plymouth, England, April 9, 1585, under the command of his cousin, Sir Richard Grenville. A settlement was made on the north end of Roanoke Island. Ralph Lane, who was a relative of the English Royal family, was made Governor, while Grenville returned to England for supplies. Lane built Fort Raleigh, calling it simply "the new Fort in Virginia." Dwelling houses were built near the fort and, with the assistance of the Indians, crops were planted and fish-traps made. The country was explored for a distance of about 80 miles to the south and 130 miles to the north. Thomas Hariot, the geographer, collected data for his book, *New Found Land of Virginia.* Likewise, for the benefit of those back home, John White, the artist, made watercolor drawings of the Indians and of the animal and plant life of the country. In short, the English occupation of "Virginia" was begun.

[1] For fuller accounts, see Porter, 1952, and Quinn, 1955.

But Grenville's supply was late in returning to Roanoke. Open war with the Indians ensued, and food became scarce. When on June 10, 1586, Sir Francis Drake, en route from the West Indies, anchored off the coast near Roanoke Island with a mighty fleet of 23 ships, many of the settlers were dissatisfied with colonial life and wished to return home. Drake's purpose was to assist the colony. He came ashore and offered the disgruntled, or wavering, colonists substantial inducements, ships as well as supplies, if they would remain in America. But discouragement prevailed, and Drake took the surviving members of the colony back to England.

Shortly afterward, Sir Richard Grenville arrived at Roanoke. He found the colony had gone. After searching for it elsewhere on the coast in vain, he left 15 men on Roanoke Island, with provisions for 2 years, to hold the country for Queen Elizabeth, and returned to England.

The Lost Colony, 1587

Raleigh's second colony, consisting of 150 men, women, and children, arrived at Roanoke Island in the latter part of July 1587 under the government of John White and 12 assistants, incorporated as the "GOUERNOUR AND ASSISTANTS OF THE CITTIE OF RALEGH IN VIRGINEA." They found only the bones of one of Grenville's men. The fort had been razed, but the houses were standing. Otherwise, all was desolation.

The old houses were repaired and new cottages built. On August 13, pursuant to Sir Walter Raleigh's orders, the friendly Indian chief, Manteo, was baptized and created Lord of Roanoke. On the 18th, Eleanor, daughter of Governor White and wife of Assistant Ananias Dare, gave birth to a daughter who was christened Virginia, because she was the first English child born in "Virginia."

After some wrangling among the assistants, it was decided that Governor White should return to England for supplies. He found England in imminent danger of invasion by Spain and could not return to Roanoke as soon as he had expected. In a sense, the colony of 1587 was sacrificed to insure English victory over Spanish sea-power in the battle with the Armada. The danger to England was so great the Queen felt that no large ships could be spared for the relief of the colony. Two small pinnaces allowed to leave England never reached Roanoke.

When Gov. John White returned to Roanoke Island in August 1590, he found that the colony had disappeared. The houses had been taken down and the place of settlement enclosed with a high palisade, with curtains and flankers "very fort-like." One prominent tree, or post, at the right

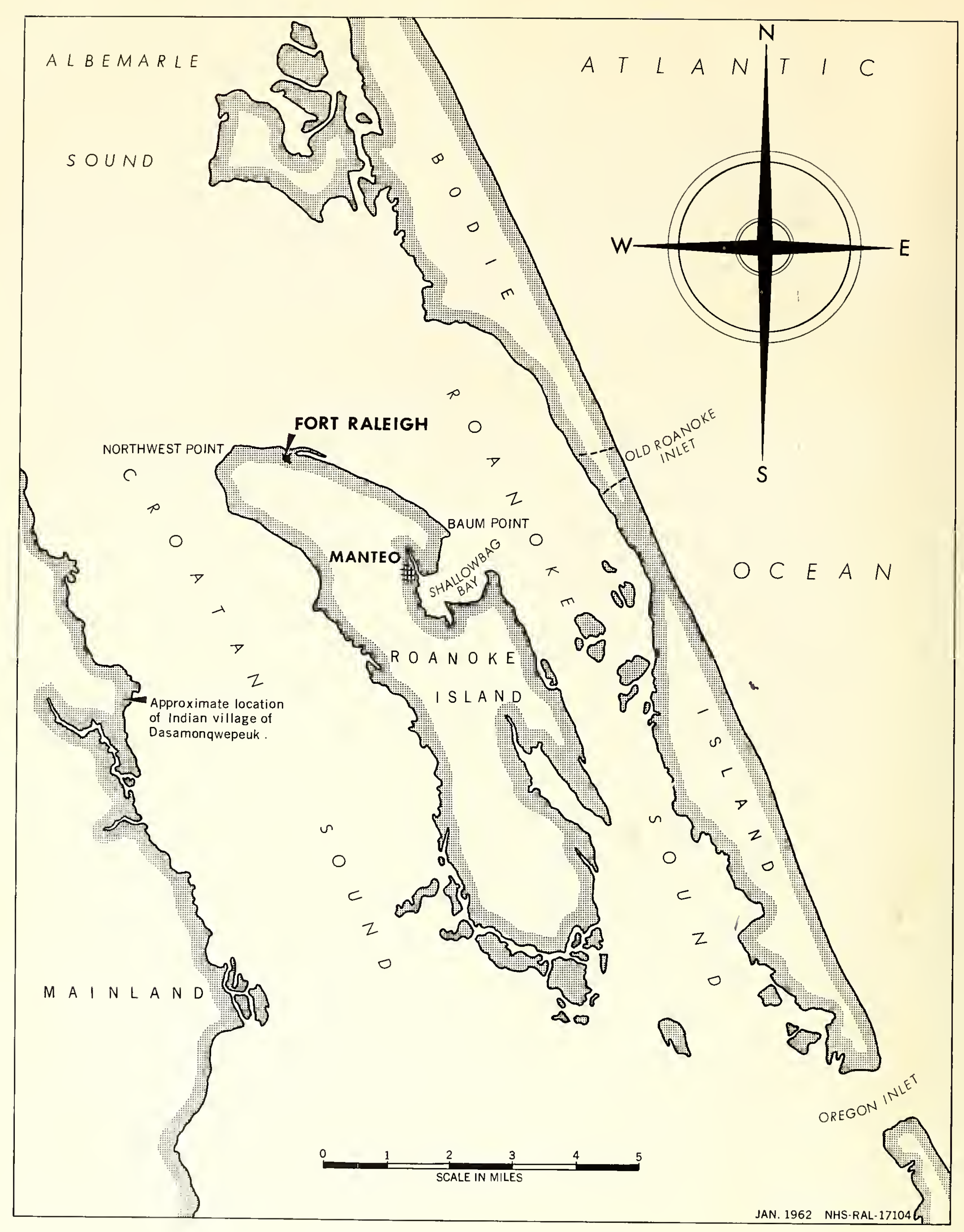


FIGURE 2—Roanoke Island and vicinity

side of the entrance to the palisade had the bark peeled off and on it was engraved in capital letters the word "CROATOAN," without the crossmark signifying distress that White had agreed should be used in the event of difficulties or enforced departure. White concluded that the colonists, including his granddaughter, Virginia Dare, and another child born in Virginia to Mr. and Mrs. Harvie, would be found on Croatoan Island (most of modern Ocracoke and part of Hatteras Islands) south of Cape Hatteras, or among the Croatoan Indians farther inland. But the tragic mystery of what became of the "Lost Colony" has never been solved.

PRESERVATION, RESEARCH, AND INTERPRETATION

Early Visits to the Site

Relatively little attention was paid to this important historic site until the end of the last century. Judging from the few references we have seen, it was visited infrequently during the 300 years following White's unsuccessful expedition in 1590.

Late in 1608, and again the following spring, a party was sent out from Jamestown "to search for the lost company of Sir Walter Rawley . . ." (Smith, 1884, pp. 132, 158), but there is no evidence that the actual site was visited until 1653. A letter written by Governor Yeardley in 1654 states that four men from the Virginia colony were at Roanoke Island the preceding year, where they found "the great commander of those parts with his Indians ahunting, who received them civilly, and shewed them the ruins of Sir Walter Ralegh's fort, from whence I received a sure token of their being there . . ." (Salley, 1911, pp. 25-26).

The next recorded visit was John Lawson's, probably in 1701.[2] He refers briefly to Roanoke Island, ". . . where the Ruins of a Fort are to be seen to this day, as well as some old English Coins which have been lately found; . . . and a Brass-Gun, a Powder Horn, and one small Quarter-deck-Gun, made of Iron Staves, and hooped with the same metal . . ." (Lawson, 1937, p. 61). B. J. Lossing, the historian, wrote that in 1850 "slight traces of Lane's fort" were visible (quoted by Porter, 1943, p. 40), and 10 years later Edward C. Bruce furnished the first description of the ruins (Bruce, 1860, pp. 733-35).

> A short trudge brought us to the site of Master Ralph Layne's strong-hold and the City of Raleigh. Of its locality there can be no reasonable doubt. The tradition of the spot has always been kept up, and every body on the island is familiar with it. . . . The entrenchments speak a mute testimony of their own. The island contains nothing else of the sort. . . . Half a mile from the eastern—or rather northeastern—shore, and a little further from the northern point of the island, it was just far enough inland to be sheltered from the heavy winds by the bluffs and woods, without sacrificing facility of watch over the adjacent waters.
>
> The trench is clearly traceable in a square of about forty yards each way. Midway of one side—that crossing the foreground of our sketch [sketch not at all clear]—another trench, perhaps flanking the gateway, runs in some fifteen or twenty feet. This is shown. And on the right of the same face of the enclosure, the corner is apparently thrown out in the form of a small bastion. The ditch is generally two feet deep, though in many places scarcely perceptible. The whole site is overgrown with pine, live-oak, vines, and a variety of other plants, high and low. A flourishing live-oak, draped with vines, stands sentinel near the centre. A fragment or two of stone or brick may be discovered in the grass, and then all is told of the existing relics of the City of Raleigh.

Undoubtedly many soldiers from the nearby Civil War forts visited the site during the island's occupation. According to Talcott Williams (1895b, p. 58), soldiers dug into the fort ruins until stopped by the owner. An iron ax, reputed to have been dug up at the site during the Civil War is described in a later section (p. 36).

Historical and Archeological Research

It is probably fair to say that research and preservation began with Talcott Williams' visit in 1887. However, some public interest had developed prior to and during the 300th anniversary. An effort was made in 1884 to have the Federal Government erect a monument, but nothing came of this movement. One writer in 1891 lamented that "today the birthplace of the American people is practically inaccessible . . . *unmarked and almost unknown*." (Weeks, 1891, p. 111.) Over the next few years after his visit in 1887, Williams carried on considerable historical and archeological research, both at the fort and in nearby Indian sites, culminating in his archeological explorations in 1895.[3]

Williams also took an active part in preserving the site, resulting in the organization of the Roanoke Colony Memorial Association and purchase of the site in 1893. The tract was extended to 16.45 acres in 1896, at which time the trace of the fort was surveyed and outlined with granite markers (figs. 5 and 8). The same year the association erected the Virginia Dare monument which now stands near the entrance to the reconstructed fort.

To the writer's knowledge, careful research on local activities during the next two decades has never been carried out, but it is known that a motion picture was filmed there in 1921. This movie, entitled "The Story of The Lost Colony," was

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[2] Lawson's account of his trip through North Carolina, which started on December 28, 1700, was published in 1709, at which time he was living in England. He does not state specifically that he actually visited the fort site on Roanoke Island, although it has always been assumed that he did. In any event it would have been in 1701, not 1709, as so many sources state.

[3] See Appendix for pertinent portions of Williams' report. He does not give the date of his excavating, but it must have been done in late autumn of 1895. The record of the December 26-27 meeting of the American Historical Association refers to Williams and his wife having just come from Roanoke Island (Adams, 1895, p. 5). Also, a letter from [Edward] Graham Daves to Prof. J. S. Bassett, dated November 23, 1895, reads: "I hope I shall meet Mr. Talcott Williams and see no objection to his digging to his hearts content in the old Fort, if he does not mar the outlines." (Daves, 1895). The date is limited even further by a letter from Williams to Bassett sent from Manteo, N.C., on Nov. 26 (Williams, 1895a). At this date he had completed his excavations and had backfilled his test pits.



FIGURE 3—Fort Raleigh National Historic Site looking northwest

The reconstructed fort is at left and the Lost Colony outdoor theater is on the shore of the sound at right. The photograph shows the heavily wooded condition of the site, which hampered the test trenching in the search for the habitation area.

produced by the North Carolina Department of Public Instruction and shown in schools throughout the State.

In 1932, the Roanoke Island Historical Association was organized, ushering in a period of intensive research and development. The area became a State historical park in 1935, under the administration of the North Carolina Historical Commission; was transferred to the U.S. Department of the Interior, National Park Service, in 1940; and on April 5, 1941, was designated Fort Raleigh National Historic Site.

In 1936, with Federal aid, extensive "restorations" were carried out, including a palisaded, bastioned fort, with log blockhouse; several log cabins and a log chapel, all with thatched roofs; a palisaded enclosure around the entire tract, with log gatehouse at the entrance; and an open-air theater. The decaying stockade posts outlining the fort blew down during the 1944 hurricane, and the blockhouse within the fort was removed soon after as a hazard. Subsequently, most of the log structures were removed, partly because of the cost of maintaining them, but mostly because research showed quite clearly that this type of construction would not have been used by the English colonists.

During the late 1930's, considerable historical research was carried on for the National Park Service by Dr. Charles W. Porter III, and Dr. Frederick Tilberg,[4] but it was not until 1947 that archeological work could be started. The

[4] The results of this research were presented in several manuscript reports. Since much of it appears in later publications, particularly Porter, 1943 and 1952, the published references rather than the unpublished typescripts are cited in the present report.

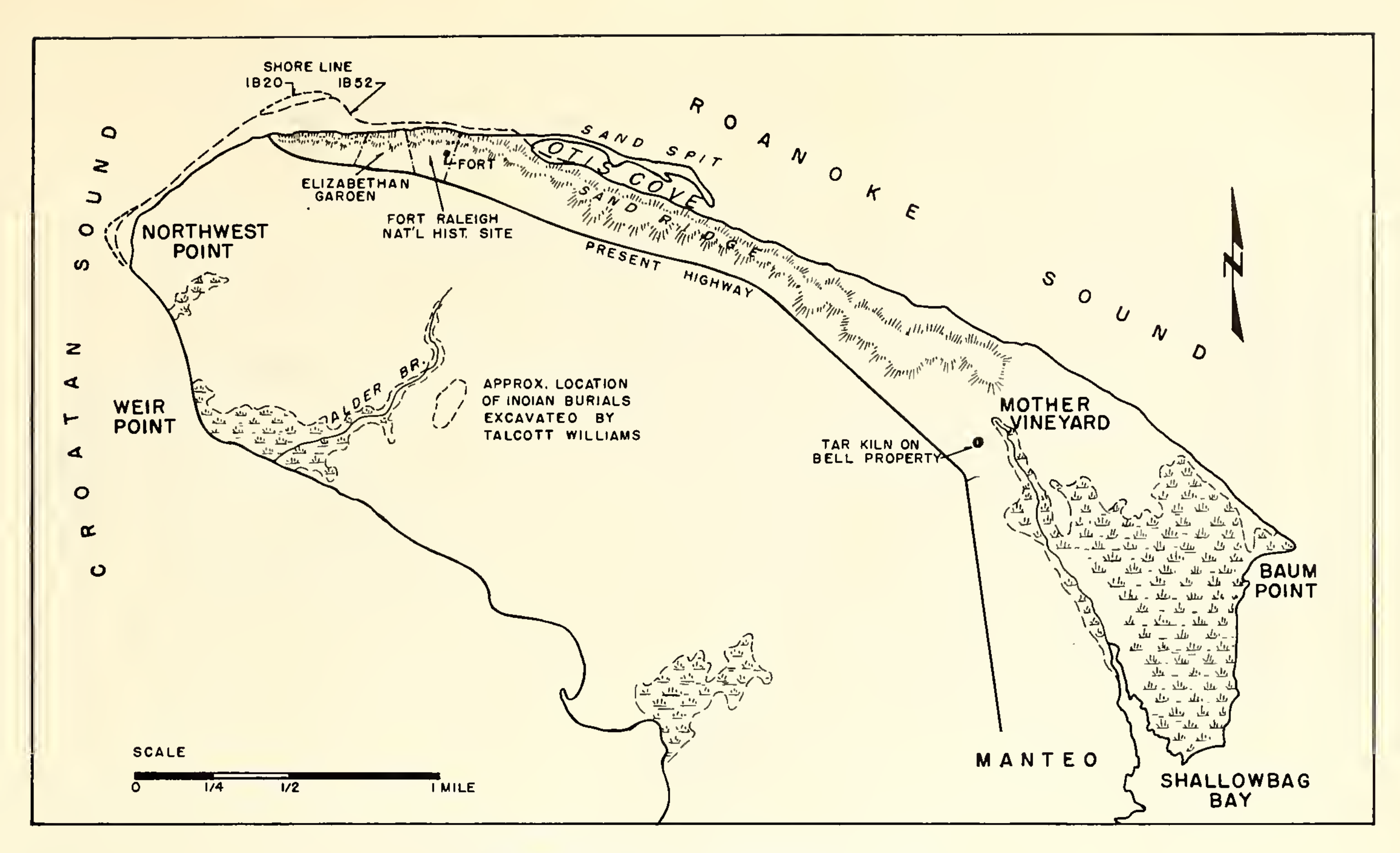


FIGURE 4—North end of Roanoke Island

Map shows principal topographic and historical features and the extent of erosion during the past century and a half.

preliminary explorations carried on that spring were designed largely to authenticate the site and to provide information for guidance in planning a larger scale project.

In the spring of 1948, a somewhat more ambitious project was carried out, during which more definite evidence on the shape and construction of the fort was secured. During both seasons' work, the area in the vicinity of the fort was explored for evidence of the original settlement and enclosing stockade. Sufficient information on the fort had been secured to warrant its reconstruction, which was accomplished in the autumn of 1950. The latest archeological work at Fort Raleigh was done in the summer of 1953, when a limited exploration of the Elizabethan Garden area immediately to the west of the historic site was carried out in advance of construction.[5]

DESCRIPTION OF THE SITE

Except for minor shore protection projects, the outdoor theater, a few log buildings, the entrance road, a boundary fence of palisades, and most recently the restored fort, the appearance of the site has not changed materially in recent years. The area is heavily wooded, predominately with loblolly pine, live-oak, dogwood, American holly, and cedar (fig. 3). Tree-ring count on one of the largest pines, blown down in the hurricane of 1944, showed it to be about 75 years old. Many of the gnarled live-oaks undoubtedly are much older. No tree, of course, dates back to the settlement, although visitors to the site often ask to see the tree on which the word "Croatoan" was carved.[6]

Soil Conditions

The 1948 exploratory trenching furnished fairly definite evidence that there had been no cultivation of the land in modern times in the general vicinity of the fort. The natural humus zone, normally about 6 inches thick, blends gradually into the natural yellow-brown sandy subsoil. In contrast, the plowed zone in the field to the east of the site was nearly 10 inches thick and sharply differentiated from the subsoil. Wind-blown sand has been deposited over much of the site,

[5] This development was carried out by the Garden Club of North Carolina, Inc., beginning in 1953; the Elizabethan Garden is operated by that organization.

[6] An earlier tradition, which identified a tree near Baum Point as the tree on which the word CROATOAN was said to have been carved, has long been forgotten. Francois-Xavier Martin, writing in 1829, states that "The stump of a live oak, said to have been the tree, on which this word was cut, was shown, as late as the year 1778, by the people of Roanoke Island. It stood at the distance of about six yards from the shore of Shalon-bas-bay [Shallowbag Bay], on the land then owned by Daniel Baum. This bay is formed by Ballast-point and Baum's-point." (Martin, 1829, Vol. 1, p. 35.)

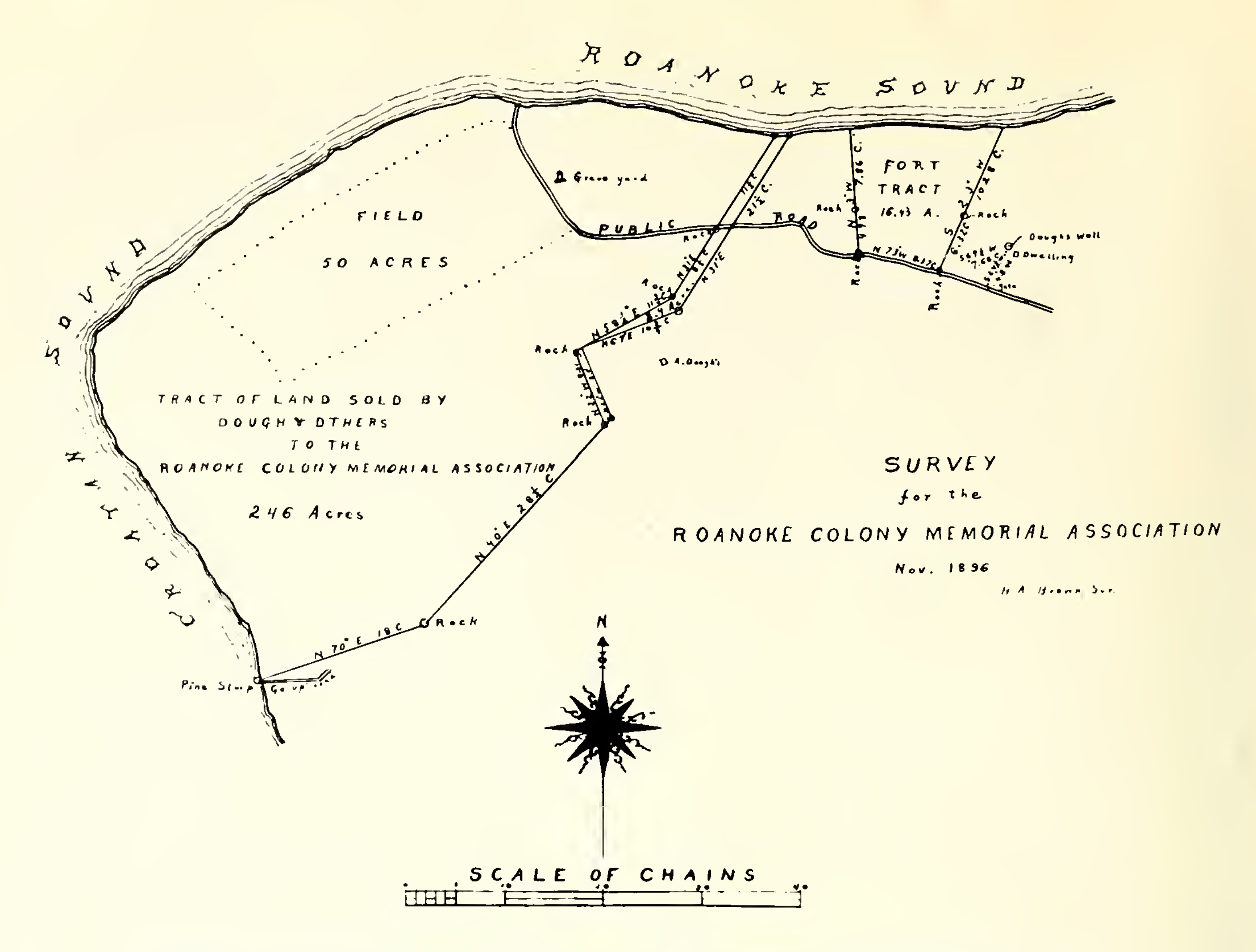


FIGURE 5—Survey plat prepared for the Roanoke Colony Memorial Association in 1896

The "Fort Tract" of 16.45 acres later became Fort Raleigh National Historic Site.

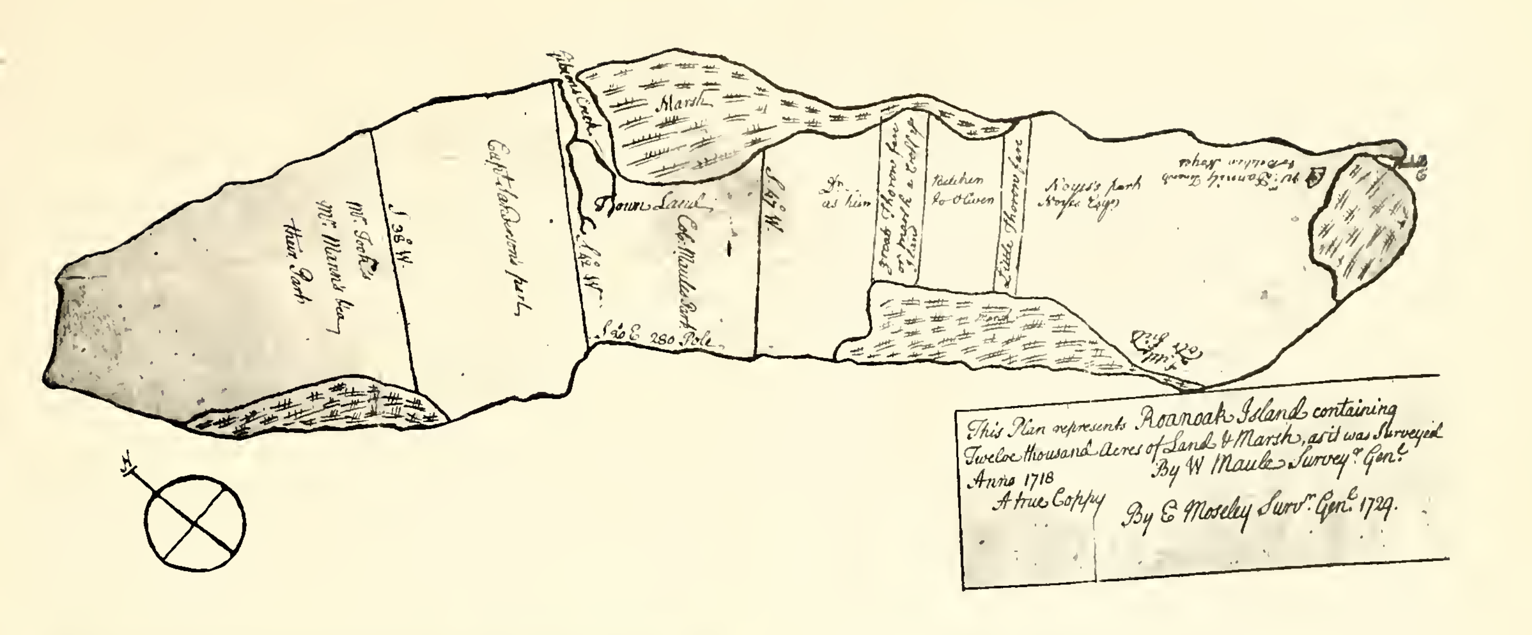
with some of the "dunes" along the shore ranging from 8 to 12 feet in height (fig. 28). The humus accumulation on these sand deposits varies from 1 to 2 inches, but no instance of a humus zone within the dunes was observed in the few trenches cutting into them. This indicates that the sand was deposited continuously over a given period, and then came to a halt, long enough ago to permit the thin humus layer to develop. Behind the dune deposit, the land is flat and uniform, with no erosion gullies.

Whereas the sand ridge along the shore between the historic site and Northwest Point appears to be of post-settlement formation, the higher dunes east of this point are of much older origin. This is indicated by the fact that they contain alternating zones of thick sand deposition and thin humus development. Charts and maps support this observation (fig. 6). Presumably the lower dunes to the west were in a formative state at the time of the mid-19th century surveys.

Erosion

The age of the sand deposits west of the fort is directly related to the change in the shoreline, which in turn is of concern in considering the possible location of the settlement site. Older residents claim that the shore has receded several hundred feet during the past half-century. This is not confirmed by recorded evidence. For example, the survey made in 1896 for the memorial association (fig. 5) shows the eastern boundary of the fort tract as 16.60 chains, or nearly 1,100 feet. Compared with the same boundary today, erosion of some 120 feet since 1896 is indicated.

Maps dating from before the accurate Army Engineers and Coast and Geodetic Survey charts of the 19th century are too small in scale, or not sufficiently accurate, to be of use in determining the amount of erosion. Study of the later, more accurate maps, however, does show considerable erosion, and corroborates the evidence from the 1896 land survey. Based upon these 19th-century maps, the earliest being Fulton's survey of 1820 (fig. 6), the erosion at the north point (Etheridge Point, also spelled Ethridge), a half mile west of the fort, has been around 700 feet during the past 140 years. These same maps indicate erosion opposite the fort to have been in the neighborhood of 200 feet during the same period (fig. 4).



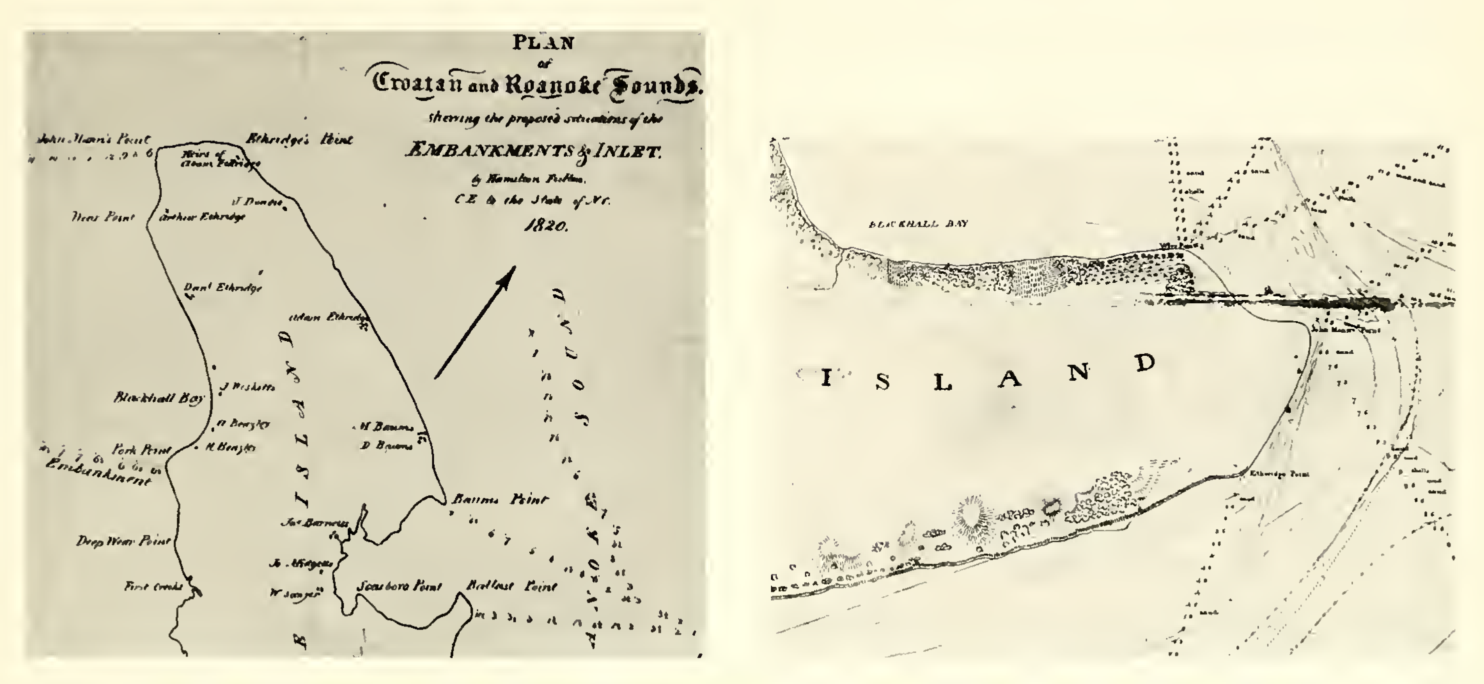


FIGURE 6—Shoreline of north end of Roanoke Island as shown by 18th- and 19th-century maps

Upper—Moseley map, 1729. The date on the original Maule map, from which this was copied, is difficult to decipher, but is probably 1716.
Lower left—Detail from Fulton map, 1820. This was the first survey made in connection with the proposal to reopen Roanoke Inlet.
Lower right—Detail from the Graham map, 1827. This is one of several surveys made by the Army Engineers during the 19th century. *Courtesy, National Archives.*

It would not be proper, however, to assume that this erosion has been continuous and at this same rate since 1585. In fact, there is some evidence that the greater part of it has taken place since 1820. Beginning at that time there was considerable agitation to reopen Roanoke Inlet opposite Roanoke Island (fig. 2). First the State of North Carolina and then the Army Engineers made studies, from which it was concluded that this inlet had been open continuously from the earliest period of exploration until it closed early in the 19th century (Simpson, 1870).[7]

Although the engineers and promoters of the project were primarily interested in a more convenient shipping lane from Albemarle Sound to the ocean, they did state that the change in currents in the sounds along either side of Roanoke Island, resulting from the closing of Roanoke Inlet, was causing changes in adjacent shorelines. This may well have accelerated the erosion at the northern end of Roanoke Island. Continuous wearing back of that section of the shore prevented development of stable dunes, such as existed eastward from the fort. This would also account for the absence of dunes on the Army maps in the section west of the fort (Graham map, fig. 6).

[7] Simpson reviewed the 50-year effort to reopen the inlet, referring to the several surveys and reports, starting with Fulton's in 1820. He cites a statement by a local resident that the inlet closed in 1819.

The Fort

In any other view the fruits were meager; but the fortune of excavation—of all pursuits of chance the most baffling and the most absorbing—may richly reward some successor with more time than the brief days I could devote.

—Talcott Williams

ARCHEOLOGICAL EXPLORATION

Preliminary Excavations

With more time available than Williams' "brief days," explorations were started in the spring of 1947. The first step was to excavate a test trench, 5 feet wide, across what appeared to be the trace of a pointed bastion (Trench "A," fig. 8).[8] Choice of a location for this, and other trenches excavated in 1947, was largely arbitrary, selecting places that would not damage trees and would permit the trenches to cross the fort trace at approximately right angles.

It was known that the fort area had been disturbed considerably, particularly in 1921 and 1936. However, the line marked by granite monuments in 1896 still followed the visible traces, suggesting that the more recent activities had not changed materially the surface evidences of the original structure (fig. 8).

Upon finding a soil disturbance in the first exploratory trench, which seemed almost certainly to represent the fort ditch, three additional trenches were excavated at other points (Trenches "B," "G," and "L," fig.8). Each was carried well below the bottom of the original fort ditch, but further explorations in 1947, and again in 1948, went only deep enough to locate the line of the fort ditch in plan. The purpose of this was to obtain an outline of the fort with the minimum excavating, primarily to avoid further destruction of the original structure.

Throughout the work, interpretation of soil conditions was complicated by tree roots and the excavations for the 1936 stockade and blockhouse, and to a lesser extent by the pits dug by Talcott Williams and the trench prepared for the 1921 movie.

Trench "A" crossed the fort ditch on both sides of the bastion, while "G" was confined to one side only of a second bastion. Trench "B" luckily, and quite unwittingly, hit one side of the fort entrance. Subsequently, "L" was located so as to pick up the other side of the assumed entrance.

The ditch profile varied somewhat, averaging 2 to 3 feet wide at the bottom, 3 to 4 feet deep, with both inner and outer slopes ("scarp" and "counterscarp") at an angle of about 45 degrees (fig. 11). The nature of the fill revealed quite clearly that the initial filling of the ditch occurred very soon after the fort was constructed, since the bottom few inches was clean sand, with no humus accumulation whatever at the very bottom. This same condition was found consistently along the entire length of the ditch when it was fully excavated in 1950. Higher in the ditch, however, irregular accumulations of humus were encountered, indicating a gradual filling over the years, but with occasional rapid deposit, presumably from erosion of the parapet. A simplified, composite cross section of the ditch is shown in figure 11.

In most of the cross sections through the fort trace some remnant of the original parapet was found, usually no more than a few inches in thickness. Overlying this deposit was the spoil from the 1936 stockade trench. This trench, which averaged 1.5 to 2.0 feet in width and 3.5 to 5.0 feet in depth, often intruded into the original fort ditch at a critical point. It was most often near the top of the inner ditch bank, obscuring the angle of the slope and preventing the securing of information on the parapet remnant at this crucial point. In addition to the stockade trench, the trench dug for the 1921 motion picture cut into the original fort ditch for some distance north of the entrance (fig. 13).

In each of the cross sections a peculiar soil condition was encountered, which was not fully understood until considerably more of the fort had been excavated. This was the layer of gray, sandy humus encountered under the remnants of the fort parapet and was first thought to be a foreign material deposited intentionally when the fort was built (fig. 12). Later evidence, however, showed it to be the remains of the original topsoil, peculiar to certain areas in this vicinity and not confined to the fort site. It is very likely the "layer of black, ashy earth" reported by Talcott Williams.

In every instance, this peculiar soil stratum terminated abruptly a few feet from the top of the original ditch slope, and eventually was shown to mark the approximate extent of the fort's parapet. The situation can be explained quite simply. The first step in building the fort was to dig the ditch, piling up the earth to form the rough parapet. Then, either to lower the grade within the fort, or to secure more

[8] All test trenches excavated in 1947 were designated by letters ("A", "B," etc.). This system was continued in 1948, except at the fort site, and again in 1953, starting each season at the beginning of the alphabet, but prefixing a year symbol ("48" and "53"). It was not desirable to orient these exploratory trenches with an arbitrary grid system, but each was tied into the established coordinate system (NPS survey, Dec. 1946–Jan. 1947). For the fort explorations in 1948 and the full excavation of the fort in 1950 a grid system was laid out, using the area survey coordinates. Elevations were taken in reference to the "FDR" marker, which was given an assumed elevation of 100.00 feet. Features were numbered, with a separate series for each test trench (A–1, 48–A–1, etc.), but with a single series for the 1950 fort excavations, designated 50–1, 50–2, etc. See figure 13.

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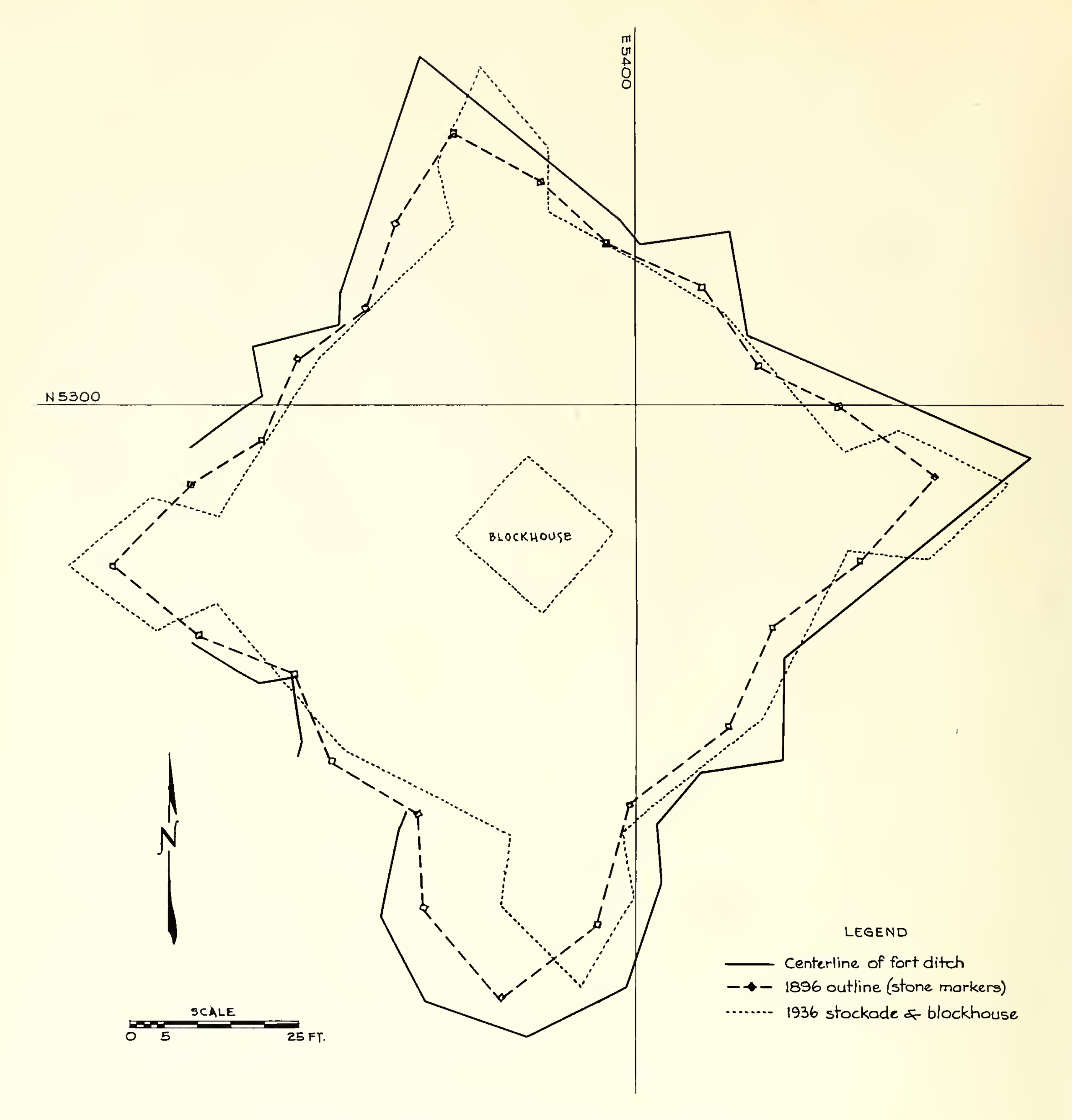


FIGURE 7—Original fort trace, and as marked in 1896 and 1936

Compare the 1896 outline, which conformed quite closely to the original trace, with the somewhat imaginative plan of the 1936 stockade.

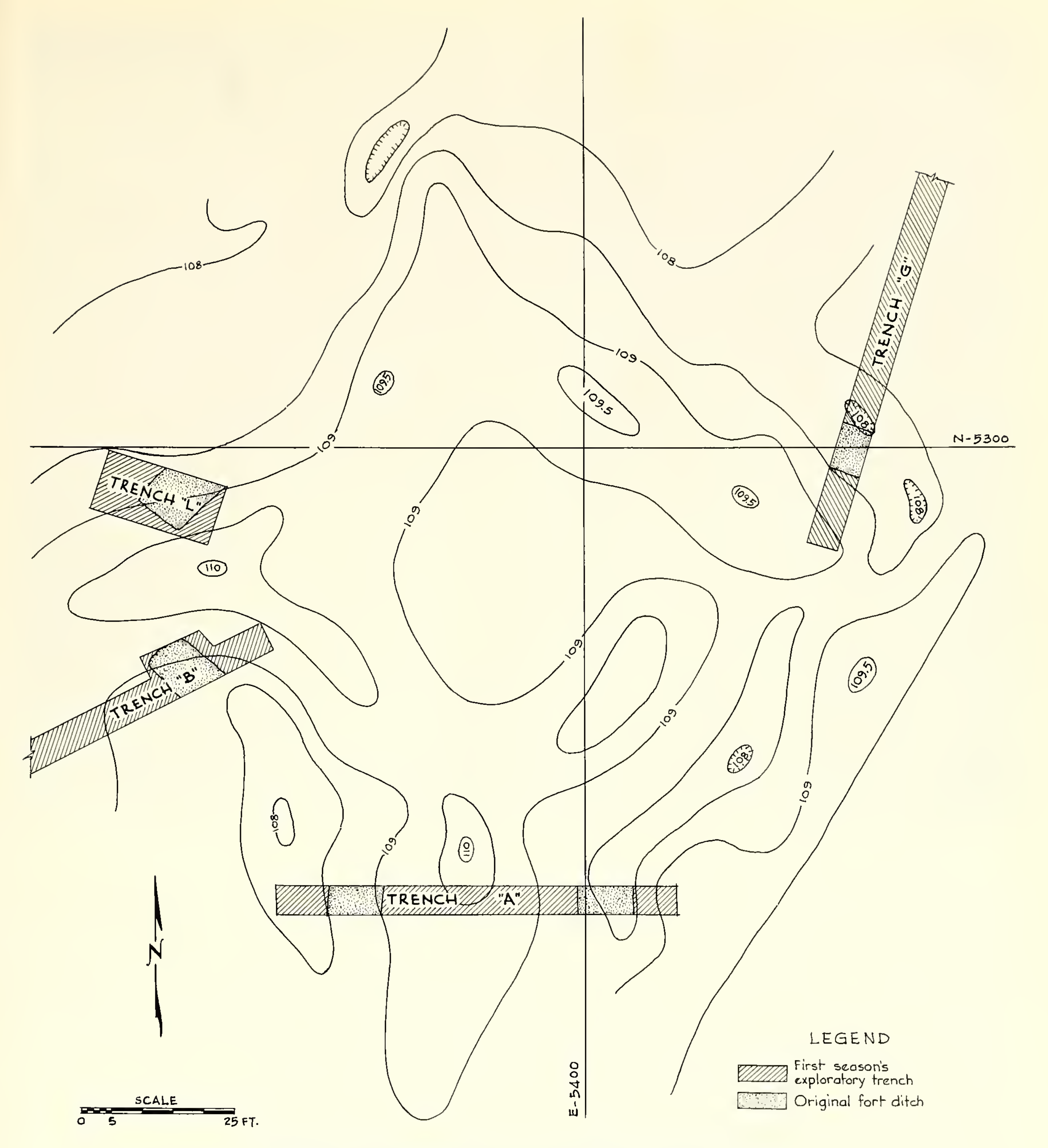


FIGURE 8—Contour map of fort site and first season's trenches



FIGURE 9—Ditch fill in the floor of a typical test trench

material for the embankment, or both, the earth was removed inside the fort to a depth of about 6 inches. Thus the original surface layer of gray, sandy humus was completely removed from within the fort and accounts for its being found only where it lay beneath the parapet.

No evidence of a palisade was found, either in the bottom of the ditch or in the scarp or counter-scarp. Too little of the parapet remained to leave any evidence of a palisade ("fraises") on the parapet slope.

Another normal feature of an earthen fort of this type was the glacis—the low ridge sloping gradually from the top of the counterscarp. Although it is conceivable that the glacis had completely eroded away, there was no archeological evidence that such a feature had ever existed here.

After observing the ditch profile at five points, further explorations in 1948 extended down only far enough to reveal the line of the ditch in plan. Sufficient testing was done, however, to furnish a fairly good idea of the fort's shape. Even before the field work began, Dr. Porter had called attention to the similarity in general plan between the apparent shape of the Fort Raleigh remains and the earthwork built by Ralph Lane in Puerto Rico in May 1585. (See page 27 and fig. 22.) This resemblance became even more striking after the second season's explorations when a more complete plan of the fort had been determined.

Excavations in 1950

Upon agreement that the fort should be restored, its complete excavation was carried out in 1950. First of all, the area inside the fort and beneath the parapet was excavated carefully, working alternate 10-foot trenches. With this area cleared, earth removed from the ditch could be piled up to form roughly the reconstructed parapet.

The ditch fill was removed very carefully, following the original slopes. The only real problem occurred where the



FIGURE 10—Profile of fort ditch in Trench B

Inner slope ("scarp") at left; "counterscarp" at right. Outline of ditch is scratched on the profile to make it stand out more clearly in the black-and-white photograph. Except for the darker humus accumulation, soil differentiation was more apparent in texture than in color. Lighter colored fill near the bottom of the ditch and along the inner slope represents earth washed into the ditch from the parapet.

trench for the 1936 stockade had cut into the side of the ditch. At such points, the line of the original ditch slope could usually be determined by interpolating between established points. Fortunately, it already had been found that the ditch profile was fairly consistent throughout. This plan of removing only the earth that had accumulated in the ditch, permits, with considerable validity, the claim that the ditch, as restored, represents the original ditch. This method had some drawbacks, however, for it prohibited observation of later intrusions, such as the eastward extension of the 1921 movie trench, since neither a smooth profile nor trench floor was maintained over a sufficient area to disclose minor soil disturbances.

The interior of the fort was examined very carefully for evidence of structures and a well. It is reasonable to assume that some sort of a shelter, both for living quarters and for storage of supplies and equipment, had been erected within the fort. In fact, there is documentary support for this supposition. In describing a plot by the Indians to destroy the settlement, Ralph Lane relates that all the houses were to be set on fire, "and . . . for them of the forte, as for vs at the towne." (Quinn, 1955, p. 282.)

The clear space inside the fort was roughly 50 feet square, too small to have contained more than one or two very modest structures, and they almost certainly would have been near the center. Unfortunately, the most likely area had been disturbed to a considerable depth in recent times. Two fairly extensive pits, for example, contained wire fencing and other modern refuse. One would expect any structure at either the fort or the settlement to have been built simply and hastily,

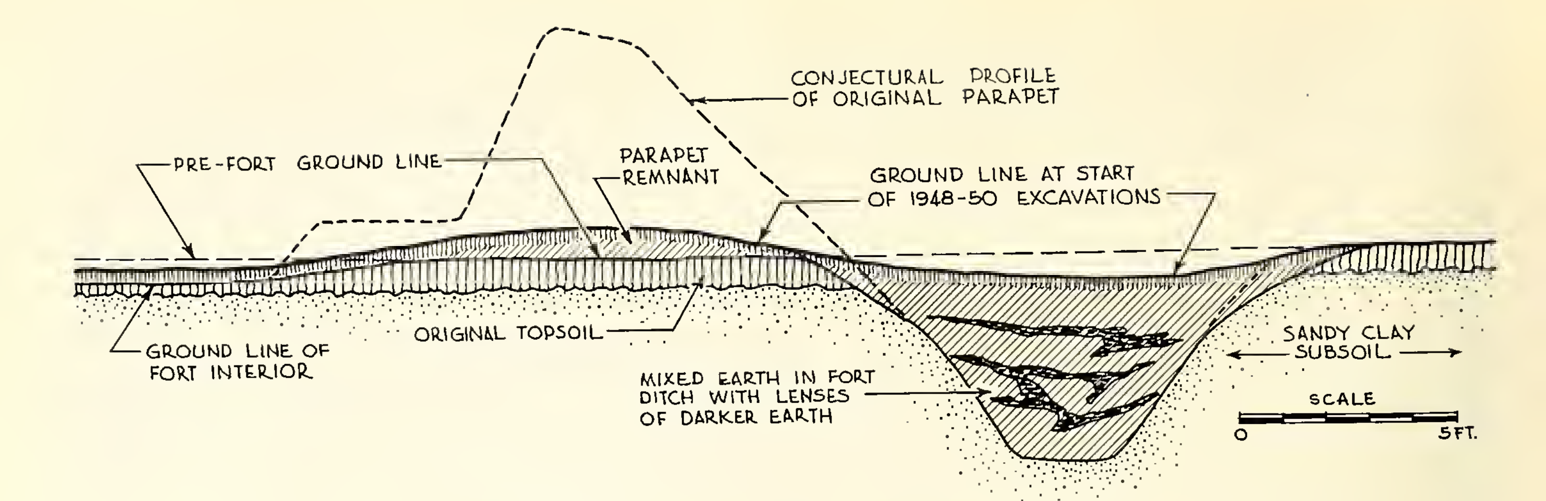


FIGURE 11—Simplified section through the fort ditch

Conjectural parapet of the original fort is shown by the broken line. The parapet was reconstructed slightly lower and with flatter slopes to facilitate stabilization and maintenance.

and placed directly on the ground with no special footings. This would have left no physical evidence.

In addition to the confusion resulting from numerous man-made disturbances, detection of the superficial evidence likely from any structure within the original fort was made difficult by decomposed tree roots, uprooted trees, previous removal of stumps, and the moving of specimen trees for landscape purposes in 1936. All of the recognized artificial features are shown in figure 13 and are discussed below, beginning with the most recent. Except for the ground immediately around the larger tree stumps, the entire area within the original fort was explored.

Practically no artifact material was found in any of the questionable features except some of the very recent intrusions and those clearly of Indian origin. Dating, therefore, must depend largely upon soil observations and the few instances in which one feature cuts into an earlier one.

The most recent disturbances within the fort, prior to the archeological excavations, were those incident to the 1936 reconstructions. They include the stockade, roughly following the original fort trace; the log blockhouse, represented by the stone footing; and the trench dug to facilitate moving the Virginia Dare monument (feature 25 in figure 13). The two large, deep pits (features 8 and 9) probably date from this same general period, but they had been backfilled, as had feature 25, before the stone footing for the blockhouse was built. Nothing about the shape of these two intrusions, each about 3 feet deep, nor of their contents, including quantities of wire fencing and similar modern refuse, suggests their purpose. No one interviewed who was on hand when the work was done in the thirties recalled these features.

Backing up another decade or so, we can identify the trench excavated in 1921 (feature 50–28) for staging the amateur motion picture. One informant recalled the feature and its location quite vividly, having fallen into it during the filming! In fact, he pointed out its location accurately before it was found in the excavating.

Next oldest are the remains of the 1896 developments when the stone markers were set, the Virginia Dare monument erected, and a worm fence built around the site. The monument had been moved to make way for the blockhouse in 1936, but the brick footing was still in place. Several of the stone markers were removed in 1936 and built into the chimney of the log museum. The remaining ones were taken up in 1950 when the fort was reconstructed.

Antedating these features by only a few years are the pits dug by Talcott Williams in 1895 (features L–2, T–1, 50–1, 50–2, 50–3, 50–4, 50–6, 50–15, 50–16, 50–17, and 50–24). There can be little doubt as to their identification, although they do not conform too well, either in size or depth, with the excavations described by Williams: "In all, 13 trenches, most of them 5 by 3 feet were opened and carried from 4 to 9 feet deep." (See appendix.) The 12 features attributed to Williams range in length from 3.5 to 8.25 feet, in width from 2.2 to 3.5 feet, and in depth from 1.75 to 5.0 feet (fig. 12). On the whole, they are smaller and much shallower than reported by Williams. It is easy to appreciate how someone working under the conditions Williams faced would have recalled the pits as larger and deeper than they actually were. Although Williams reported excavating 13 trenches, only 12 were found. The 13th could very well have been in one of the areas which could not be examined carefully because of large tree stumps, or it might have been within the later disturbed area near the center of the fort.

Only one artifact was found in any of these pits—a brass rifle cartridge near the bottom of feature 50–3. However, pieces of modern cement mortar were found scattered throughout the fill in feature L–2. This mortar is like that in the original Virginia Dare monument footing, and similar material was also found near the surface in this immediate area. Additional evidence that some of these rectangular pits attributed to Williams are pre-1936 is shown by the fact that the spoil from the stockade trench extends over both features L–2 and T–1. Note also that the relatively recent



FIGURE 12—Soil conditions encountered in the fort excavation

Upper—Floor of Trench A, showing darker fill of fort ditch in the foreground. The workman is pointing to the top of the light-gray sandy layer representing the original topsoil.

Lower—One of Talcott Williams' rectangular test pits (feature 50–24) excavated in 1895. Very dark areas in the foreground and in the back profile are decayed tree roots; quarter-circle area at upper right is probably from a blown-down tree. The arrow points to the grade of the fort "parade."



FIGURE 13—Plan of the fort showing archeological features

excavation under the blockhouse (feature 50–8) cuts across the end of feature 50–15, one of the assumed Williams pits.

Williams reported finding many "fragments of charcoal and frequent firepits." He also refers to firepits extending down some distance into the undisturbed subsoil. Undoubtedly these were remains of tree roots, which resemble charcoal under certain conditions. He also reports "small pieces of iron, a corroded nail, and some small fragments of Indian pottery, networked." This is quite plausible, although it is the writer's opinion that his "small pieces of iron" were concretions, which were found in considerable numbers during the 1947–50 work. Since at least two of his pits extended into the fort ditch fill, he might very well have found the fragments described, and at some depth. Uncharitable as it sounds, it is probably fortunate that Williams failed to recognize evidence of the fort ditch.

Next oldest feature is the shallow pit in the east side of the fort (feature 50–7). It dates from sometime between abandonment of the fort and Williams' explorations, since one of Williams' pits cuts into it, and since it cuts through the parapet remnant. The best guess is that it was dug during the Civil War, when soldiers are reported to have done some exploring at the fort (page 3).

Stratigraphically, the oldest features within the fort are

the two roughly rectangular depressions, features 50–18A and 50–18B. Because of the many disturbances in this particular area, the evidence is somewhat obscured. They may possibly represent a single long feature, rather than two, but it would appear from the available evidence that feature 50–18A is 7 feet wide by 15 to 16 feet long, while feature 50–18B is 11 feet wide and 15 to 16 feet long. Both features, which extended down approximately 1 foot below the original fort grade, were filled with a uniform medium-dark gray sandy loam, completely sterile. The thin dark humus layer that had developed over other undisturbed areas within the fort, likewise extended over these features. Neither contained any evidence of construction in the form of rotted wood or building debris.

A reasonable conclusion is that these intrusive features are related in some way to the original building, or buildings, within the fort. However, in view of their apparent shape and size, it does not seem likely that they reflect more than the general location and orientation of the building. Because of their uniform depth of approximately 1 foot, they may represent eroded remains of depressed sections within a central building.

Although the area immediately outside the entrance was carefully explored, no evidence of a palisade or other protective feature was found. A water well inside the fort was also anticipated, but since one was not found, we can only conclude that the fort garrison depended upon casks and possibly earthenware containers for this need. In this connection, the recovery of fragments of ceramic vessels, typical of those commonly referred to as "olive jars," is possibly significant (see pp. 23, 38).

As mentioned earlier, the cross section of the fort ditch was fairly uniform, and was continuous except for two breaks (fig. 13). The main entrance on the west was discovered in 1947, but the second gap, although found in 1948, was not fully worked out until the entire ditch was excavated in 1950. Elevation of the bottom of the ditch varied from 93.3 to 95.3 feet, but this was probably due, not to special ditch design at different points, but rather to the amount of earth required to construct the adjacent parapet.

Except for exploring the area immediately outside the main entrance, the only excavating done beyond the outer limits of the ditch was in connection with the 1947 and 1948 test trenches (fig. 28).

OBJECTS OF EUROPEAN ORIGIN[9]

Relatively little material of European origin was found in the fort excavations, and almost all of it could date from the period of the Raleigh colonizing ventures. This does not provide, in itself, proof of a late 16th-century date for the structure, even though none of the objects exhibit characteristics that preclude such a dating. These objects include one nearly complete iron sickle and possible fragments of a second, a carpenter's auger, several large wrought-iron spikes, a few wrought-iron nails, three latten casting counters, two copper nuggets, one glass bead, several fragments from Spanish olive jars, a portion of a majolica jar, one brick fragment, and a small piece of roofing tile.

The principal contribution of these objects of European origin is their value, in conjunction with historical evidence, in dating the structure. Absence of certain types of objects also contributes some important historical information. If the fort had ever been attacked by the Spanish, a great many musket balls almost certainly would have turned up. In view of the fact that only two lead balls were found in the entire fort excavation, we can safely assume that the earthwork never was under attack by an enemy armed with muskets. A reasonable conclusion from the small number of European objects recovered is that the fort was occupied by a small force over a relatively short period. The basis for such a conclusion must be from the results of excavations of other military structures, weighed, of course, in the light of any special factors peculiar to this particular site.

In the following descriptions, the obviously modern objects are omitted. Any significance they have in dating intrusive features or soil strata has already been mentioned.

Iron

Sickle. The most spectacular iron object found in the fort area was the wrought-iron sickle (No. 97 [10]). lying less than 6 inches above the bottom of the fort ditch (fig. 14). The iron was so badly rusted that it could not be removed in one piece. However, the several fragments lay flat in a crescent-shaped pattern, showing that the object was whole, or nearly so, when deposited in the ditch.

Because of its extremely deteriorated condition, the original cross section of the blade could not be determined precisely. The main portion probably was about 33 mm. wide and roughly 4 mm. thick. There is a suggestion of a slight crest, or ridge, along the center of the blade. The tapered tang, rectangular in section, is approximately 127 mm. long. The point of the blade is missing, but the complete implement would have measured about 320 mm. (12½ inches) from its point to the handle end of the blade. It would have had a wooden handle, 25 to 30 mm. in diameter and 150 to 180 mm. long.

Judging from similar articles in British museums, as well as contemporary prints, this type of sickle was in common use over a very long period. Although it cannot be dated from shape alone, its position near the bottom of the fort ditch associates it quite definitely with the Raleigh colony.

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[9] Although feet and decimals of a foot were used for all field excavation records, artifact dimensions are given in millimeters in order that the data may be more readily compared with descriptions of similar objects in published reports.

[10] Archeological field catalog numbers are used throughout this report, since references are made to many small fragments that have not been accessioned and assigned museum catalog numbers. All excavated objects are on exhibit or in storage at Fort Raleigh National Historic Site, and a complete artifact catalog is also available at the site.

FIGURE 14—Wrought-iron sickle

Another sickle may be represented by a piece of badly rusted iron (No. 5) found at the bottom of the ditch, but some distance from the nearly whole specimen described above. It, too, is about 38 mm. wide and beveled from a maximum thichness of 4 mm., but too little of it remains to determine its original size and shape.

Auger. Although badly rusted, this object (No. 96) is almost certainly an auger, probably the type known as a "gouge bit." (See Mercer, 1951, pp. 180–182.) It was found on the very bottom of the fort ditch, and must have been dropped there before any erosion of the parapet took place. The tool appears to have been about 380 mm. long (15 inches), with a shank 9 to 10 mm. square and about 270 mm. (8.5 inches) long. One end is flattened, with remnants of wood still adhering to it. The grain of the wood is at right angles to the shank, indicating a T-handle, typical of such tools. The auger portion, about 110 mm. in length, is crescent-shaped in cross section and about 25 mm. wide. The end is too badly rusted to determine the exact type of tool represented, but it appears to have been the simplest gouge type, rather than a "spoon" or "rose" bit (fig. 16).

Spikes and Nails. Several large, hand-wrought spikes were found, mostly in a limited area, suggesting that they had been left there in a pile or in a container. They were lying just above the original ground surface, but within the earth of the parapet remnant along the north face of the east bastion, and apparently deposited there soon after work was started on the fort. Since the parapet remnant was only a few inches thick at this point, one must recognize the remote possibility that



FIGURE 15—Wrought-iron spikes

Five of a group of eight wrought-iron spikes (No. 18) found under parapet remnant.

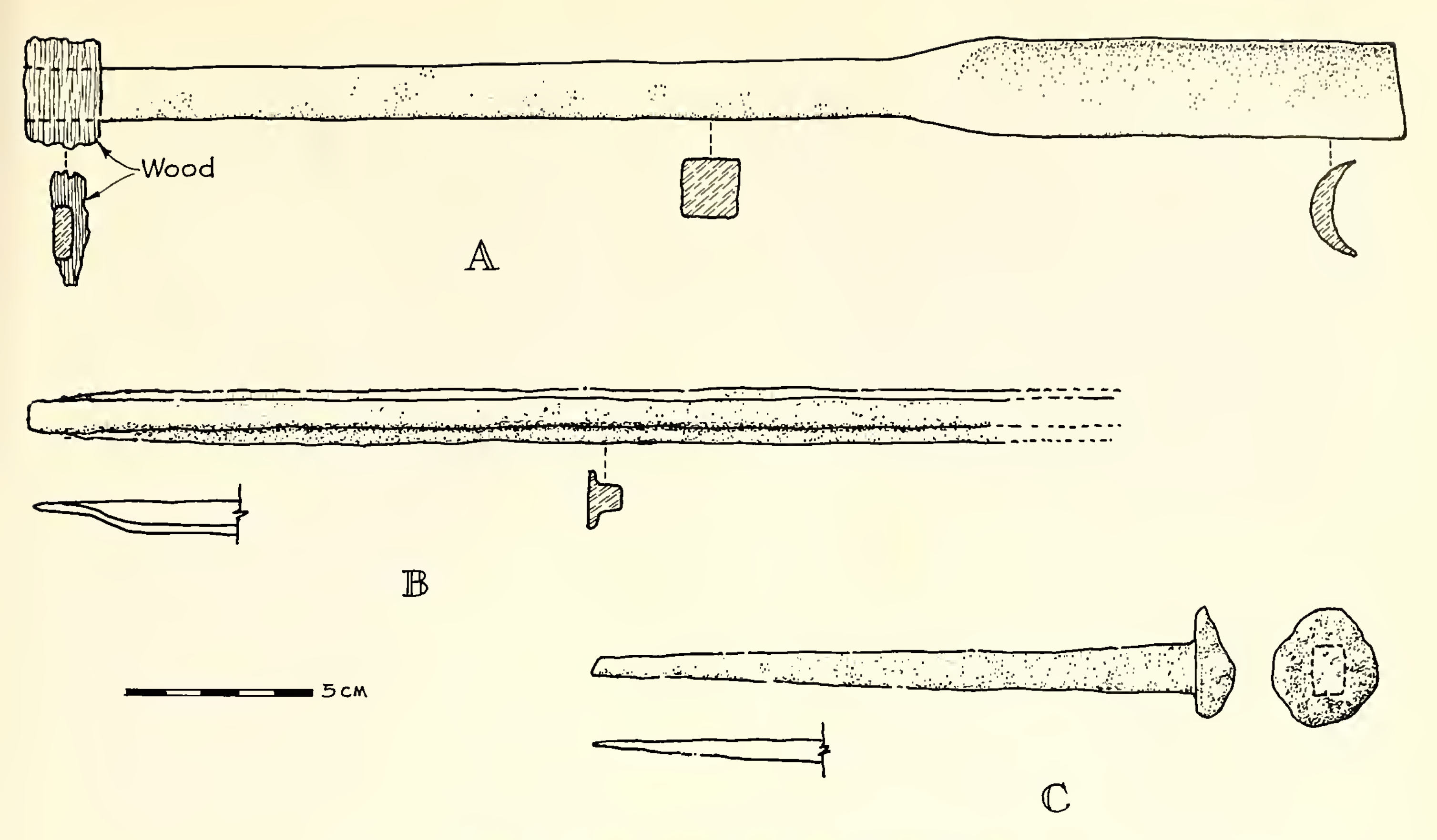


FIGURE 16—Iron objects from the fort excavation

A—Auger (No. 96); *B*—Unidentified T-bar (No. 90); *C*—One of a group of eight spikes (No. 18).

heavy objects of this sort could have been dropped on the ground in recent times and have worked down into the sandy soil.

Eight spikes were found in this deposit (No.18) with another (No. 56) discovered nearby during final grading of the fort interior. A similar spike was found near the surface at the fort entrance (No. 104). Two other fragments (Nos. 91 and 92), possibly from a single specimen, were found near the fort entrance, and are similar to the whole ones.

These spikes have every appearance of antiquity, both from their badly rusted condition and their shape. Of those from which the point was not missing, the longest is 178 mm. overall, and the shortest 153 mm. They are rectangular in section, tapering to a narrow chisel point, with irregular, off-center mushroom heads (figs. 15 and 16).

No complete nails were found in the fort area, although 3 rusty nail fragments were recovered. Two (Nos. 29 and 69) were in the vicinity of the spikes under the parapet remnant, and are possibly as old as the fort. The third (No. 67) came from near the surface at the fort entrance. All are typical wrought-iron nails, rectangular in section, with mushroom head.

Other Iron Objects. Other iron objects of possible 16th-century date include two U-shaped pieces, an iron bar, and a hinge fragment. The two bent objects (Nos. 3 and 78) may be U-bolts, or possibly even bent nails or thin spikes. Each is about 100 mm. in total length, but without heads or other distinguishing features, except that they are rectangular in section. Finding them more than a foot deep in the fort ditch, and not in a modern intrusion, indicates that they are of some antiquity, although not necessarily as old as the fort.

The iron bar (No. 90) was found a foot above the bottom of the fort ditch near the secondary entrance. It is badly corroded, and its remaining length of about 305 mm. (just under 12 inches) is probably less than its original length. It is T-shaped in section, with one end flattened, suggesting that it was forged to fit over another member (fig. 16). It may have been a saddle bar for a wrought-iron casement sash, although such luxuries would not be expected in the buildings at the settlement. In view of the evidences of transient use of the partially filled ditch by Indians, at and above the level at which this iron bar was found, the best guess is that it was tossed into the ditch, or left there, by an Indian.

The hinge fragment (No. 48), although in the ditch fill, was near the surface. In addition to its location, its design makes it of questionable antiquity. Although badly rusted, it is clearly part of a hinge, the leaves being approximately 60 mm. wide and 90 mm. long. Length of bolts, still in place, shows that the wood to which the hinge was attached was 1 inch thick.



FIGURE 17—Casting counters

Upper—Composite drawing of three identical casting counters (pierced hole omitted); two are from the fort excavation (Nos. 81 and 89); and one was found at an Indian site near Buxton, N.C.

Lower—The third Hans Schultes counter from the fort excavations (No. 99), showing pierced hole.

Metal, Other than Iron

Casting Counters.[11] Of all the objects recovered in the explorations at the fort site, three casting counters (Nos. 81, 89, and 99) are by far the most informative (fig. 17). Although none was found in a situation that would date it positively as of the Fort Raleigh period, these objects, unlike those of iron and ceramics, literally speak for themselves. Of particular interest is the fact that a counter identical to two of the three from Fort Raleigh was found at an Indian village site near Cape Hatteras in 1938.

Casting counters were used for manual reckoning in much the same manner as the abacus, in conjunction with a ruled board, table, or cloth. This computing device was used from early times, but the practice died out during the 17th century with the introduction of the Arabic numeral system and more convenient writing materials.

All four counters were made by a Hans Schultes, known to have been in this business in Nuremberg, Germany, during the period from 1550 to 1574. They were made of a

[11] See Harrington, 1956, for a more detailed discussion.



FIGURE 18—Balance weights

Set of nested brass apothecary weights dating from the 17th century in the Squibb Ancient Pharmacy Collection, Smithsonian Institution. The weight found in the fort ditch (No. 83) is similar to one of the smaller weights in this set. *Courtesy, Smithsonian Institution.*

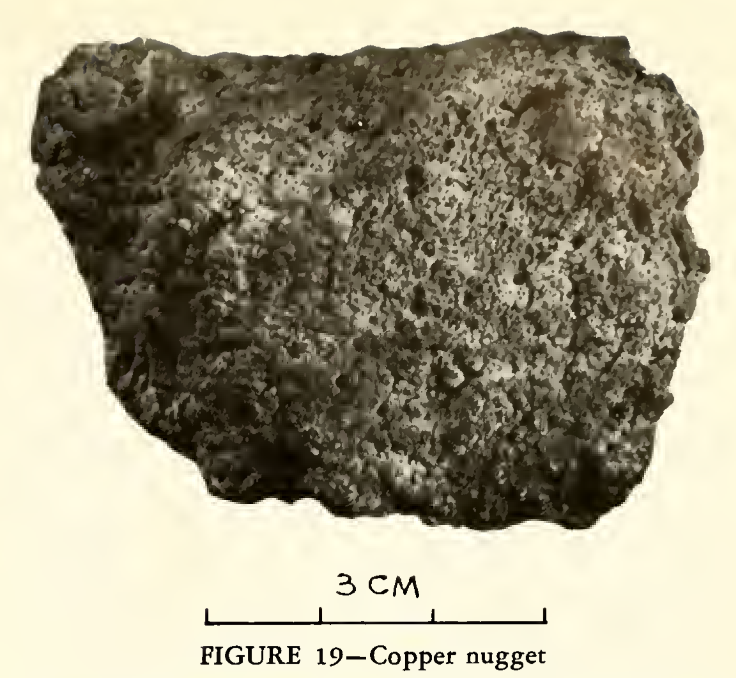


FIGURE 19—Copper nugget

One of two chunks of copper from the fort excavation. This specimen (No. 87) was found in the half-filled fort ditch; the second was at a higher level.

cheap alloy of copper, zinc, and lead, known as "latten," and average 24 mm. in diameter. They are very thin, stamped on prepared "flans" with metal dies, producing a design on both faces in very low relief.

Obviously manufactured for the English market, these metal discs have stamped on them, in addition to the name of the manufacturer and location of his factory, popular English design elements, such as the rose and fleur-de-lis. One of the Fort Raleigh specimens also contains a short maxim, or motto, in German, an element commonly found on counters made in Nuremberg during this period.

Each of the Fort Raleigh counters had one or two holes punched through it, making it unfit for use on a counting table because of the rough burr. Very likely they were used as items of trade with the Indians, the holes permitting them to be strung. They would have been ideal as trade goods, being both attractive and cheap.

It is tempting to interpret the fourth counter, found at an Indian site some 40 miles to the south, as related in some way to the possible exodus of the colonists to "Croatoan." Considerably more evidence would be necessary, however, before we would dare identify the site either as the destination or a stopping point in the alleged events associated with the "Lost Colony." This interesting point will be discussed later in connection with the aboriginal material recovered from the excavations.

Balance Weight. A tiny cup-shaped brass object (No.83) was found in the fort ditch less than 1 foot deep. It is one of a set of nested apothecary weights, and can very well date from the 16th century. It is 23.5 mm. in diameter at the top, 19 mm. at the bottom, 10 mm. high, and weighs 192.7 grains (0.44 oz.). On the inside bottom is stamped a letter, either "H" or "R," surmounted by a cluster of 6 dots.

Such weights were widely used throughout the world from the middle of the 16th century to some time in the 19th. The complete set varied in number, usually from 8 to 10 nested cups, each twice the weight of the next smaller one. Those for English use often contained 9 cups ranging from one-sixteenth of an ounce to 1 pound. Nested cups were stored in a highly ornamented container of the same metal (fig. 18).

Copper Nuggets. Next to the casting counters, the most interesting non-ferrous objects found were two chunks of surface-pitted copper (fig. 19). One specimen (No. 85) appeared just below the surface in the parapet remnant, while the second (No. 87) was in the ditch fill, about half way down. Their position, therefore, is not conclusive as to origin, but does show that they are not recent.

These specimens are pure copper, of a rough, spongy appearance. The larger (No. 87) is cubical in shape, about 50 mm. on a side, and weighs 21½ ounces. The second, slightly smaller, weighs 12 ounces. This smaller lump was examined by the Bureau of Standards, whose preliminary report describes the inner structure of the copper as dendritic, or cored

in cross section, and that it definitely gives evidence of having been smelted. These nuggets are almost certainly of European origin, since a temperature of just under 2,000° F., required for the melting of copper, would not have been possible through simple methods available to the aborigines. Quinn points out that this copper could possibly have been smelted by Joachim Ganz at the settlement (Quinn, 1955, p. 907). Ganz was a mineral expert listed among the 1585 colonists, and is known to have had experience in the smelting of copper before he went to America with Lane. Analysis of the copper, which has not been accomplished as yet, would possibly throw some light on its origin.

Musket Balls. Only two lead musket balls were found at the fort, and from their position in the ground both can be associated with the period of the colonial settlement. No. 75 was found near the broken Indian pot (No. 68) at the bottom of the fort ditch. It has the typical flattening from inpact, which suggests several intriguing, but unprovable possibilities. The second, No. 82, found in the old topsoil under the parapet remnant, is undeformed with a diameter of 15 mm. This is consistent with other lead musket balls found elsewhere in the area, whose diameters range from 14 to 17 mm.

Glass and Ceramics

Glass Bead. A single glass bead (No. 95) is the only glass object found at the fort. This pale-green, opaque, slightly elongated spheroid-shaped bead is 6.5 mm. long and 5.5 mm. in diameter. Its exact position in the ground is not known, since it was found in the earth thrown up when excavating the fort ditch, but it almost certainly came from the ditch fill.

Olive Jars. Twenty-two sherds from the typical Spanish pottery vessels commonly known as "olive jars," were recovered from the fort excavation. These jars were used for transporting and storing liquids, such as wine and olive oil, although very possibly they were used at the fort as water containers. A rather large fragment (2 sherds), consisting of the entire mouth and portion of the shoulder (No. 81) was found at the bottom of the ditch near the Indian pottery sherds, No. 80 (fig. 20). Later a group of 12 sherds was found when removing a tree stump inside the fort, approximately at the toe of the parapet (No. 102). Interestingly, one of this group fitted No. 81, suggesting that the entire group, as well as the rim section from the ditch, came from the same jar. Since the neck fragment was pressed into the hard earth at the bottom of the ditch, and the group of 12 was probably under the parapet or the firing step, it would seem that the vessel had been broken and discarded while the fort was under construction.

This unglazed pottery is uniform in texture, but porous, tempered with fine sand, and with horizontal markings on both the inner and outer surfaces.[12] The outer surface varies from light gray to yellow to red-buff. One large sherd is probably from a point near the widest bulge in the body of the jar, its curvature indicating a diameter of over 300 mm., somewhat larger than the typical jar of this style, as reported by Goggin. This sherd has a body thickness of 9 mm., while the body thickness near the neck is only slightly less (fig. 20). Another fragment (No. 76) similar to No. 102 was found in the ditch close to a group of Indian potsherds (No. 68).

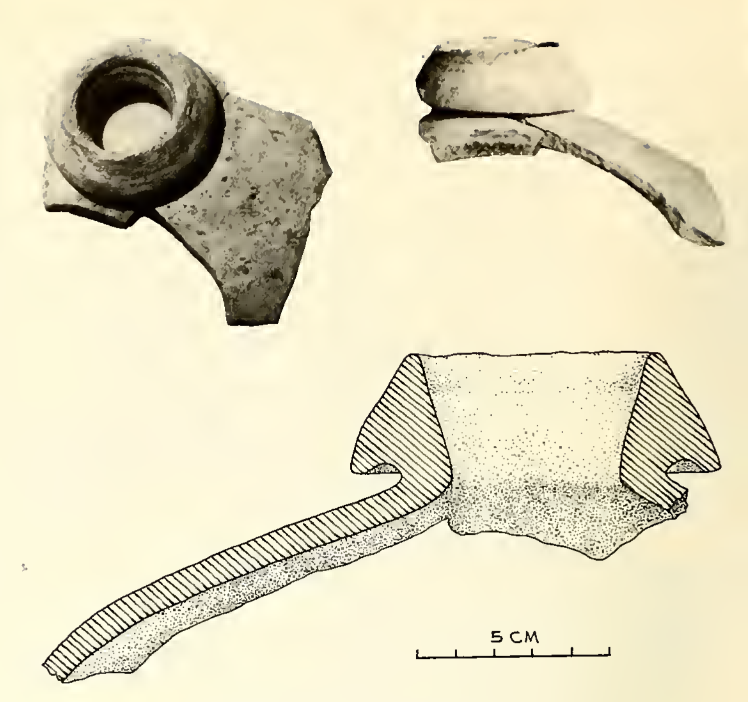


FIGURE 20—Spanish olive jar

Upper—Two views of a Spanish olive jar fragment (No. 81) found at the very bottom of the fort ditch.
Lower—Section showing the shape of the mouth and the shoulder.

Seven additional sherds (Nos. 62, 65/1 and 65/2, and 105/1–4) were from the interior of the fort, but resemble the others, so it is possible that all of the 22 fragments of this ware represent a single vessel.

Other Ceramics. One very small rim sherd (No. 88) is a uniform brick-red paste, with brown glaze on both surfaces. Edges are water worn, suggesting it was picked up on the beach, although it was found a foot deep in the ditch fill.

The only other fragments of non-Indian pottery are two majolica sherds (No. 103) with 3-color polychrome design. The interior surface has a highly polished glaze, varying from white to dark gray. The fragments are too small to show the exact size and shape of the original vessel, but appear to be from an apothecary jar of the albarello type.

Clay Building Products

Bricks. Only one brick fragment (No. 1) was found in a situation that unquestionably places it at an early date. Other pieces of brick were near the surface or in the backfill of one of the Talcott Williams pits. In addition, they are of a different texture and color, and appear to be of a much later date.

[12] See Goggin, 1960, for description of shapes, method of manufacture, and more complete ceramic description. The Fort Raleigh sherds appear to belong to Goggin's "Middle Style," dating from 1585 to 1800 (*ibid.*, p. 24).

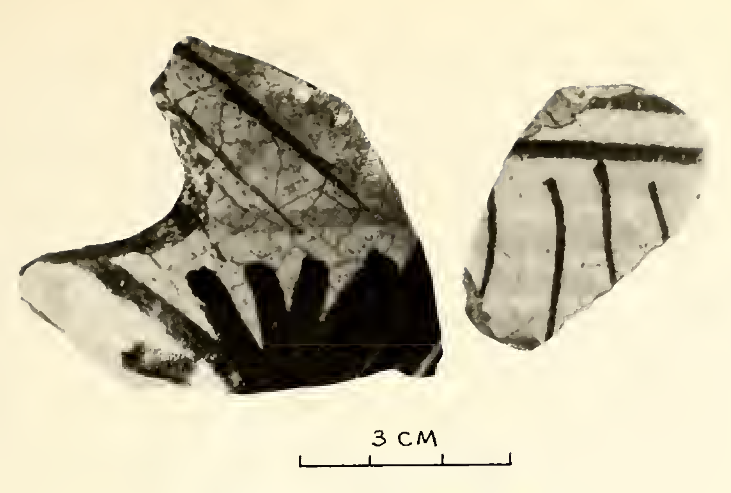


FIGURE 21—Apothecary jar

Two majolica sherds (No. 103) with polychrome design of brown, blue, and yellow.

The one old fragment is less than a quarter of a whole brick, so only the thickness could be determined. This is 57 mm. (2¼ inches), which corresponds with the statute size for this period, and with many of the Jamestown bricks. In color, texture, and relative softness, it also resembles typical 17th-century bricks from Jamestown.

This fragment came from the ditch fill in Trench A, at a surface depth of 2.3 feet, or exactly halfway to the bottom of the ditch and at the same level as the nearby hearth of Indian origin (feature 50–20). It was found more than 10 feet from the 1936 stockade trench and clearly deposited when the fill in the fort ditch was slowly accumulating. Like most of the other objects in the ditch fill, association with the Raleigh colony cannot be demonstrated with certainty, but the evidence is fairly conclusive that it is not of recent origin. Even if it was thrown into the half-filled ditch by Indians, they most likely picked it up in the vicinity.

Roofing Tile. The second clay building product represented in the finds at the fort is a small fragment of a flat roofing tile found at the very bottom of the ditch just south of the entrance (No. 93). It is 13 mm. thick, very hard, and a salmon-red color. It is quite unlike the Jamestown shingle tiles, being harder, slightly thinner, and having a smoother struck surface and unsanded mold surface. It also appears to have less warp than typical 17th-century tiles.

IDENTIFICATION OF THE SITE

Tradition is not too acceptable as historical evidence, but, prior to the finding of more satisfactory evidence through archeology, it was largely upon tradition that we were dependent for identification of the ridges and depressions as the remains of Lane's "new fort." Tradition had been bolstered along the way by the alleged finding of appropriate relics on the ground, but one can never be certain whether later observers are referring to the remains of the earthen fort or the palisaded enclosure.

Tradition received its biggest impetus in 1895, when Talcott Williams did some digging at the site and found what he considered to be definite proof of its identification. Unfortunately, he interpreted his archeological finds in support of the tradition, and actually contributed no concrete evidence for the site's identification. His work was of value, however, in keeping tradition alive and in creating interest in the site. He was not alone in this, for several articles on the Lost Colony appeared about that time. These, with Williams' report, played an important part in the formation of the Roanoke Colony Memorial Association.

The subject was advanced a little beyond the level of tradition through a more thorough and critical analysis of documents by Tilberg and Porter in the thirties. I will not review the various pieces of evidence resulting from their work, but they include, in addition to an analysis of original exploration and colonizing records in relation to waterways and topography, such specific contributions as the Collet map of 1770 (Porter, 1943, pp. 40–41). On this map is shown a fort-like symbol, labelled "Fort," at approximately the location of the excavated earthwork. It was shown again on a later copy of this map (Mouzon, 1775), but does not appear on any other map of Roanoke Island known to the writer prior to the surveys made in connection with the site's acquisition by the memorial association in the 1890's.

The evidence that these remains antedated the Civil War is thus fairly conclusive. In addition to the Collet map and descriptions by visitors, such as Edward Bruce in 1860, the digging by Federal soldiers in 1863, which was put to a stop upon complaint of the owner, shows that there were intriguing ruins here at that time (Williams, 1895b, p. 58). It also shows that the traditional identification of the ruins was well established in 1863 and that some people, even then, were concerned with the preservation of historic remains.

Identification by means of archeology, which Talcott Williams failed to provide, could be of three principal sorts. First, objects of the period recovered in the excavating, and datable from style or inscriptions. Second, structural evidence, consistent with recorded facts about the fort, or with fort construction of the period. Third, absolute or relative dating from stratigraphy, soil profiles, or other established archeological techniques. Each of these has contributed some evidence to the identification of the remains in question.

Identification from Age of Excavated Objects

As discussed in an earlier section, every object found in a situation indicating some antiquity could be of the settlement period. The few recent objects were found either on the surface or in a modern intrusion, such as a Talcott Williams test pit. True, most of the old material cannot be placed within narrow time limits, but those that can, such as the casting counters, fit the picture.

The evidence from this source is quite satisfactory, and relatively conclusive, when coupled with the documentary evidence. It tells us that the fort in question was almost certainly built by Englishmen about the period of the Raleigh colonizing ventures. Actually, the artifacts in themselves

point only to late 16th- or 17th-century occupation, but on the historical evidence can be reasonably narrowed to the earlier century. They do not tell us, however, whether this earthwork was built in 1585, or during the second colonizing attempt.

Identification from Structural Evidence

Normally one would expect to have some contemporary reference to a structure that would help in identifying it, even with nothing left but the below-ground remains. But there is not a single word in the contemporary records that will help us in this instance. Although Lane wrote of building "sconces" elsewhere, he was not considerate enough of later historians to use a single adjective for the Roanoke Island structure, other than "new."

Reconciling the two accounts of 1587 and 1590 concerning the structures found at the settlement by returning colonists has always been a perplexing problem. In the former, White wrote:

The 23. of Iuly, the Gouernour, with diuers of his companie, walked to the North ende of the Island, where Master Ralfe Lane had his forte, with sundry necessarie and decent dwelling houses, made by his men about it the yeere before, where wee hoped to finde some signes, or certaine knowledge of our fifteene men. When we came thither, wee found the forte rased downe, but all the houses standing vnhurt, sauing the neather roomes of them, and also of the forte, were ouergrowen with Melons of diuers sortes, and Deere within them, feeding on those Mellons: so we returned to our companie, without hope of euer seeing any of the fifteene men liuing.

The same day order was giuen, that euery man should be imploied for the repairing of those houses, which we found standing, and also to make other newe Cottages, for such as shoulde neede. (Quinn, 1955, p. 524).

In addition to the very pertinent problem of the location of the fort in reference to the houses, we are concerned with any clues this record furnishes on the appearance of the fort. Actually, it furnishes very little. It suggests that the earthen parapet had eroded considerably in the year's time, or had been leveled down intentionally. It also corroborates the earlier evidence from Lane's account of the Indian plot that there were buildings within the fort. But it gives no clue as to the appearance or function of such buildings.

In the account of John White's 1590 "rescue" mission, we find equally confusing and indefinite information. Here is a suggestion of a palisade around the settlement. White's record reads:

. . . we found the houses taken downe, and the place very strongly enclosed with a high palisado of great trees, with cortynes and flankers very Fort-like, and one of the chiefe trees or postes at the right side of the entrance had the barke taken off, and 5. foote from the ground in fayre Capitall letters was grauen CROATOAN without any crosse or signe of distresse; this done, we entred into the palisado, where we found many barres of Iron, two pigges of Lead, foure yron fowlers, Iron sacker-shotte, and such like heauie things, throwen here and there, almost ouergrowen with grasse and weedes. From thence wee went along by the water side, towards the poynt of the Creeke to see if we could find any of their botes or Pinnisse, but we could perceiue no signe of them, nor any of the last Falkons and small Ordinance which were left with them, at my departure from them. At our returne from the Creeke, some of our Saylers meeting vs, tolde vs that they had found where diuers chests had bene hidden, and long sithence digged vp againe and broken vp, and much of the goods in them spoyled and scattered about, but nothing left, of such things as the Sauages knew any vse of, vndefaced. Presently Captaine Cooke and I went to the place, which was in the ende of an olde trench, made two yeeres past by Captaine Amadas: wheere wee found fiue Chests, that had been carefully hidden of the Planters, . . . (Quinn, 1955, pp. 614–615).

Quinn suggests that the "trench" may have been the fort ditch (1955, p. 593). Obviously the fort-like stockade had been built after White's departure in 1587, and almost certainly refers to something quite apart from Lane's "new fort" of 1585.

So, no matter how much these meager records are squeezed, we invariably come out with little more than the fact that there were at least two structures on Roanoke Island referred to at the time as forts, or as fort-like in appearance. The earlier one, separated from, but near the settlers' homes, was "rased downe" between 1586 and 1587; the second a rugged stockade surrounded the habitation area, and was still standing in 1590, although the houses had been destroyed. Of the excavated earthwork, all we can say with reasonable certainty is that it dates from the late 16th century, although available evidence points to its being Lane's "new Fort in Virginia."

RECONSTRUCTION

Upon completion of excavations in which a structure is involved, one of an archeologist's obligations is to provide an interpretation of what the original structure looked like. In addition, of course, the report would be expected to cover such matters as date of construction, cost, source of materials, history of ownership and use, alterations, destruction, and anything else relevant to the structure's history.

Often the structural situation is so involved that a specialist in some phase of architectural history is called upon to collaborate on this phase of the archeologist's report. In the present instance, however, the structure in question was relatively simple. In addition, the archeological evidence imposes very definite limitations on the conjectural reconstruction.

In attacking a problem of this nature, three types of source materials are used, if available: (1) documentary, or recorded, information about the structure in question, both explicit and implicit; (2) archeological information, which would include both the physical remains of the structure and inferences drawn from objects and conditions encountered in the excavating; and (3) precept and custom—contemporary manuals and guides, and the manner in which structures of the same type and function actually were built during the period in question.

Documentary Evidence

As is far too often the case, specific data on the structure from documentary sources is virtually non-existent. Of the few contemporary references to a fort, not one mentions materials, size, or method of construction. The previously quoted account by Ralph Lane of the Indian plot, implies that there was at least one structure at the fort with an inflammable roof. The later account of the finding of the settlement in 1587 definitely implies that there were buildings in the fort, as well as in the habitation area (Quinn, 1955, p. 524). The palisaded enclosure found by White's party in 1590 was almost certainly a distinct structure from the small earthwork, and presumably was built by the second group that came in 1587.

What might appear to be a more fruitful source is the anonymous and undated manuscript, probably written in 1584 or 1585, and undoubtedly relating to preparations for the 1585 Virginia voyage (Quinn, 1949; 1955, pp. 130–139). The notes contain very specific instructions on locating, constructing, and equipping a fort.

The recommended structure, according to these notes, should be pentagonal in plan, with large bulwarks. It was to be an earthwork, but large enough to contain the entire settlement, including a marketplace in the center. Even so large a structure, according to the advisor, could be built in a month. Instructions also called for a wide ditch with palisade and even a covered way beyond the ditch. Although the actual Roanoke settlement was much smaller in scale than that envisaged by the manuscript notes, these notes show very clearly that the men planning the colonizing venture were thoroughly and professionally advised in military matters. In fact, Ralph Lane may have been selected as second in command under Grenville because he was a fortification expert, (Quinn, 1949, p. 219).[13]

Another type of implicit documentary evidence relating to the fort, and having a bearing on its original appearance, would include such information as its location in respect to possible attack, and the nature of that attack if it should occur. Under the latter, we would be interested in who the attackers might be and how they would be armed, and whether or not defense against artillery would have to be provided. These, and other factors would very definitely influence the design and method of construction of a fort.

When the first group located their settlement and built their fort in the summer of 1585, it is quite apparent that their major concern was with the Spanish. At that time they had no special fear of the Indians, and it was not until later in their year's stay that there was any cause for concern from the natives. The colonists' first and primary thought was to avoid discovery by the Spanish. Secondly, they must be prepared to defend themselves if discovered. Almost certainly the enemy would approach from the water side, and since no large ships could come through the inlets into the sound, there was no need to fear cannon fire from ships.

We might very well reason that they would locate their fort close enough to the shore to ward off landing parties. Actually, this would probably not have been a consideration, since the small landing boats could have put ashore almost any place along the beach. If, therefore, we assume the structure in question to be the "new fort in Virginia," built in the summer of 1585, it could conceivably have functioned only as a place of refuge for the entire settlement in the event of a major attack. Its distance of at least 600 feet from the shore might suggest that concealment was of major concern.

The colonists could do no less than prepare for a possible attack by a sizable landing party. No doubt some of the enemy, as well as the defenders, would have had firearms, but at that early date the majority would probably have carried such weapons as the pike, sword, and crossbow.[14] It is unlikely that cannon would have been used by an attacking force, although conceivably smaller pieces, such as falcons and falconnettes could have been brought ashore. The defenders would have found artillery of some value, although its use definitely would have been limited. The alleged discovery by early visitors of small cannon lying about the site is suggestive only, since it cannot be established that the observers were referring to this particular fortification. White does mention "Falkons and small Ordinance which were left with them at my departure . . ." (Quinn, 1955, p. 615), but this refers to his departure in 1587, and may well have no bearing on the question of armament of the 1585 earthwork.

Archeological Evidence

From the archeological explorations we have both positive and negative information to guide us in a "paper" reconstruction. The fort ditch is the only definitive evidence on the positive side, for the traces of parapet tell us very little. However, the extent of the undisturbed original light-gray surface soil furnishes rough information as to the width of the parapet base. The probable exterior slope of the parapet can be established from the natural repose of earth thrown up from the ditch.

Other positive evidence is the 6 inches of earth removed from the interior of the fort after work on the parapet was started. This earth may have been needed for increasing the height of the parapet, for building gun platforms, or for other construction. On the other hand, it may have been removed simply to provide a better surface for this heavily used area, since the natural topsoil in that sandy terrain is soft and powdery.

The only other evidence in this category is the very inconclusive suggestion that there might have been one or two slightly sunken buildings in the center of the fort. Other

[13] A letter in the Bodlein Library from Lane to one W. Hearlle, dated May 4, 1583, offers a scheme of fortification for the Kingdom of Poland (Lane, 1583). Three additional manuscripts, relating to military organization, were written by Lane between 1590 and 1591, showing that he was an experienced military authority (Lane, 1590–91).

[14] It is of interest to note in White's drawing of the Cape Rojos earthwork that of the four sentries and the one man directing the work, three are carrying pikes, while two have firearms.

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FIGURE 22—Cape Rojos earthwork

John White's watercolor drawing of the earthwork built under Ralph Lane's direction at Cape Rojos, Puerto Rico, in May 1585 while the colonists were en route to Roanoke Island.

than these shallow, roughly rectangular depressions, there was no archeological evidence whatever that there had ever been a building within the fort.

In the way of negative evidence, we can cite the absence of any suggestion of a glacis or of any supplementary features, such as a ravelin, to cover the main entrance. Careful examination of the bottom and sides of the ditch revealed no indication of palisades. None of the artifacts furnish clues as to the structure's original appearance; even the iron spikes are quite uncommunicative.

Precedent and Military Practice

Precedent in the form of military manuals and recorded examples of forts of this size are not prevalent for this early period, although the art of fortification was fairly well systematized by 1585.[15] One of our best sources, and to the writer's knowledge, the earliest publication in English, is Paul Ive's *The Practise of Fortification*, printed in London in 1589 (Ive, 1589).

The first part of this manual deals with small earthworks designed primarily for guarding frontiers, and comes as near as any contemporary reference to covering the structure on Roanoke Island. The fact that other manuals published during the next century are very similar in many respects to Ive's work, indicates that military architecture was moderately well advanced by the time of the Raleigh expeditions. Most of the other contemporary material, however, deals with larger structures designed for fortifying towns or cities. For this reason, Ive's treatise on small frontier forts is all the more valuable.

A small, isolated entrenchment of this sort was often referred to as a "sconce," sometimes spelled "skonce." Ralph Lane, in fact, used this term in writing of his plans for developing the colony, which called for erecting a series of sconces at intervals all the way to Chesapeake Bay (Quinn, 1955, pp. 261–263). These sconces were to have "a small trench, and a pallisado upon the top . . ." (*ibid.*, p. 262). Lane also comments on the strategic value of a sconce at Port Ferdinando to protect that inlet from the Spanish, but like the other line of forts up the coast, it was never built.[16] But even though his plan for a series of defensive works was not realized, the fact that Lane discussed them as possibilities is of importance in the interpretation of the fort on Roanoke Island, since the latter was almost certainly built under Lane's direction.

Of greater interest is the fort built by Lane during the voyage to Virginia. Fortunately, there is a pictorial record of this entrenchment among the paintings of John White (fig. 22). The little earthwork, erected in less than 2 days, was located on the southwest tip of Cape Rojos on the Island of Puerto Rico, probably at Salinas Bay (Quinn, 1955, p. 404). It was intended only as a very temporary protection for a small party while they were pillaging salt from the Spanish, and scarcely deserves White's label of "fort."[17] There is good evidence that White was an accurate observer and drew what he saw, although we are tempted to attribute some of the special devices shown on the Cape Rojos structure to embellishments by White. In its basic plan, this earthwork bears a resemblance to the one on Roanoke Island, being essentially a modified star fort, formed on a square. This design, however, was not peculiar to Lane or to the two structures under discussion.

The Roanoke Island structure, even though unsymmetrical and more simple in plan, bears sufficient resemblance to Lane's Cape Rojos earthwork to suggest contemporaneity, and even the possibility of a common builder. (See Quinn, 1955, p. 905; Porter, 1952, pp. 8, 11, 35.) It would be unsound, however, to draw any conclusions from the Cape Rojos plan as to construction details for the fort on Roanoke Island, since conditions were not at all comparable. The former was constructed hurriedly on a sand beach, with no real expectation of attack (Quinn, 1955, p. 229).

The large fortified camp at Mosquetal (Mosquito Bay), Puerto Rico, was another matter, for here there was a very definite and serious threat from the Spaniards (Quinn, 1955, p. 181). Strictly speaking this earthwork was a line of connected small works, rather than a fort in the true sense, whereas those at Cape Rojos and Roanoke Island, even though small, more nearly deserve being called forts. There is every reason to believe that White's depiction of this larger earthwork at Mosquetal is accurate, making it of particular value in working out certain details of the Roanoke Island reconstruction, especially the arrangement of the ditch and parapet at the fort entrances.

Reconstruction—Actual and Ideal

The information discussed in the preceding section was at hand when the reconstruction was carried out in 1950. Some compromises were made for purely practical reasons, and during the 10 years that have elapsed some different ideas have developed. In this section I will describe both the actual reconstruction of 1950 and the ideal reconstruction as presently conceived.

Although the bastioned fort was the recommended design, even as early as 1585, it was by no means universally used. The type of weapons with which the soldiers were equipped had a great deal to do with the design of fortifications, particularly small field works. Pikes, longbows, and swords were still the prevalent arms of Raleigh's day, and Lane would have designed his fortifications accordingly. Pointed or rounded salients were preferable to true bastions

[15] The formal bastioned system was developed in Italy in the early 16th century, and by the middle of that century specification rules for fortification construction employing the bastioned system had been developed, particularly in France, where a manual was published as early as 1557 (Nugent, 1903, pp. 440–41). The earliest treatise in English that the writer has seen is a handwritten translation, dated 1559, of a French publication, which illustrates and discusses the prescribed methods of fortification construction, emphasizing the value of the bastioned system (Corneweyle, 1559).

[16] Quinn, 1955, p. 202. Quinn places Port Ferdinando approximately at present Oregon Inlet (Quinn, 1955, pocket map).

[17] The caption on White's drawing reads: "The forme of a fort which was made by *Master* Ralfe Lane in a parte of St. Iohns Ilande neere Capross where we toke in salt the xxvith of May. 1585." (Quinn, 1955, p. 404.)





FIGURE 23—Reconstructing the fort parapet

Left—Shaping the outer slope of the reconstructed parapet. The outer slope of the ditch behind the workmen has not been completely excavated. Note the lighter colored earth in the lower part of the slope, which is the original undisturbed clay.

Right—Part of the fort in which excavation of the ditch and reconstruction of the parapet have been completed. The next step was to stabilize the slopes by planting grass.

when defenders were equipped with pikes or swords, although in theory, salients are quite satisfactory when firearms are used. But gunners firing hastily were inclined to shoot straight ahead, and bastions, therefore, furnished better protection to adjacent walls. The transition from older-type weapons to firearms was occurring about the time of the Roanoke Island settlement, and coincided with the development of the bastioned system of fortification. This helps to explain the basic plan (trace) of the fort on Roanoke Island, as suggested from the outline of the excavated fort ditch. It also tends to minimize the importance of the apparent similarity between this fort and the earthwork built by Lane at Cape Rojos.

The one element of the original fort that is known almost in its entirety is the ditch, and it served as the logical starting point in planning the reconstruction. Lacking are only a few scarp and counterscarp sections destroyed by the 1936 stockade trench. None of these sections were at critical points, and each could be interpolated from adjoining undisturbed slopes. Even though the shape of the ditch does not conform to formulas and instructions in military manuals, it will have to be accepted. It is quite evident that the principal function of the ditch was to furnish earth for the parapet and that those who built the fort were not concerned with adhering rigidly to formulas.

The height and profile of the parapet were not too difficult to determine, although this involved some guesswork. The two known facts were the amount of earth used (assuming none had been removed from the site, or none brought in since the fort was built) and the thickness at the base, suggested by the width of the dark-gray sand layer. (See p. 9 and fig. 13.) In respect to the latter, the archeological evidence served as a clue, but certainly was not sufficiently reliable to follow blindly in establishing the exact thickness of the parapet. But it does establish the very important fact that the parapet followed exactly the outline of the ditch.

One important point that had to be decided arbitrarily was whether there had been a berm between the parapet and the toe of the ditch. The berm lost out for several specific reasons. First, it would have moved the parapet inward, making it difficult to conform to the archeological evidence, assuming, of course, that our calculations for the parapet profile were correct. Second, although a berm is desirable on earthworks, particularly where sod is not available to hold the face, it was by no means always incorporated in the design. In view of the flattening out of the upper portion of the scarp, it was reasoned that the parapet would probably have continued up on the same slope. Fortification manuals of even a much later date show both methods; as for example Muller (1757) and Lochee (1783). Lastly, neither of the Puerto Rican structures drawn by White shows a berm.

As for the plan of the parapet, the line of the dark-gray sand layer, as well as the precedent of the two works on Puerto Rico, provide reasonably sound justification for assuming that the parapet followed the line of the ditch. However, there is no way of knowing whether there were portions







FIGURE 24—Fort reconstruction nearing completion

Gun platforms and embrasures are yet to be formed.
Upper left—Looking southeast; the palisade in the background is an old boundary fence.
Upper right—Looking north; the secondary entrance is at left.
Lower—Looking west toward the main entrance.

of parapet constructed without a corresponding ditch, as White's drawing shows was the case at Mosquetal. Remnants of the parapet had been so altered in recent years that no safe conclusion could be drawn from that source, although there seemed to be no apparent evidence of unusual departure from the simplest possible plan. We can only conclude, therefore, that the parapet followed the ditch and that it had a uniform profile throughout.

Determination of the parapet profile presents no real problem. All fortification guides are fairly consistent for works of this scale. The outer slope, if not revetted (use of a masonry wall or some other structural device for maintaining a steeper face) would conform roughly to the natural repose of the earth. There is no reason to believe that this was not the deciding factor in this instance, where the earth thrown out of the ditch excavation assumed a slope of about 45°. The height of the parapet would have been about 6 feet above the interior grade, with a firing step (banquette) 1.5 feet high. It is possible, of course, that there was no firing step, but it was shown in all manuals and presumably used except in very temporary works. The banquette, like the berm, is not shown on the Puerto Rico works, but it would

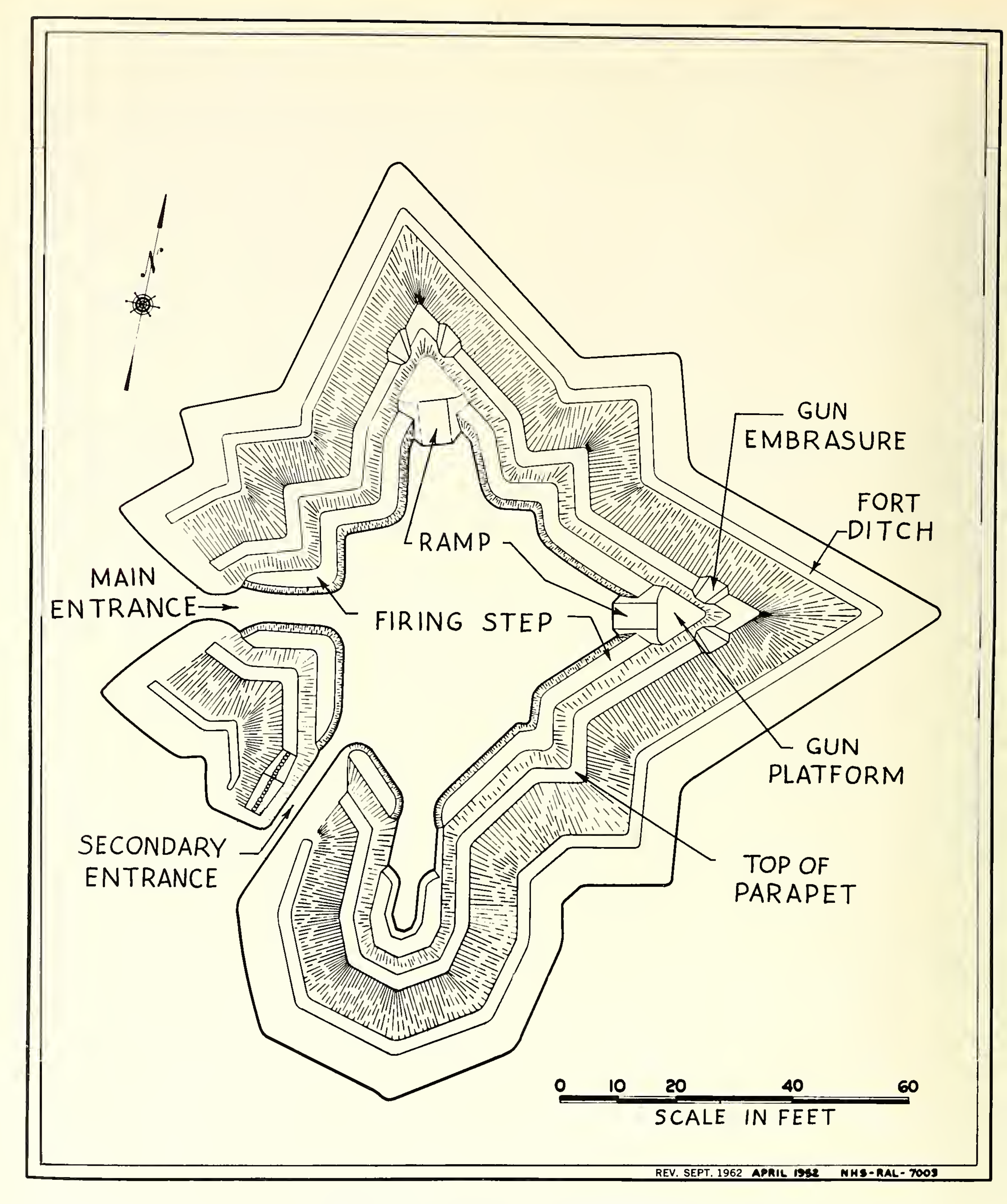


FIGURE 25—Plan of the fort as reconstructed

Only the earthen portions of the fort were included in the reconstruction carried out in 1950. (See frontispiece for other possible features in the original fort.) Embrasures were placed in the reconstruction, but later study does not support their inclusion, since they would not be called for if swivel guns were used.

seem less called for there than at the more permanent fort on Roanoke Island. The firing step was normally about 3 feet wide.

The top of the parapet usually sloped down slightly toward the outside and was thick enough to protect the soldier standing behind it. Of course, he was partially exposed when firing, but he could step off the banquette when reloading. Preferably the faces of the parapet were sodded or otherwise protected from erosion, but there is no way of telling whether anything of this sort was done here. Although the interior slope is shown as steep as 6 to 1 in some manuals, it was found by experiment that the earth here would stand at 2 to 1 after it had settled, and this would seem a reasonable estimate for the orginal parapet. Moreover, a parapet profile based upon the above figures fits the base width determined roughly from archeological evidence (fig. 11).

The ineffectiveness of the star fort, in contrast to the bastioned type, becomes apparent when an attempt is made to fit gun platforms into the plan. Although there is no direct evidence, either documentary, or archeological that mounted ordnance was used here, it is only reasonable to assume that it was.

Records from the first colonizing venture, when the fort is presumed to have been built, make no mention of ordnance. There are several references to small cannon, however, in accounts of succeeding events on Roanoke Island. According to a deposition of the Spanish pilot, Pedro Diaz, "four pieces of artillery of cast-iron" were left "in the said fort" by Grenville in 1586 (Quinn, 1955, p. 791). This suggests that any ordnance placed in the fort during the first year was removed when the colonists left for England before Grenville arrived. When White's party returned in 1590, they found within the palisaded enclosure four iron fowlers and some iron saker shot, but no trace of the "falkons and small ordnance" which were there when White left the colony 3 years before. These fowlers were very likely the four cannon left with Grenville's men in 1586. Likewise, the "quarter deck gun" seen by Lawson at the site in 1701 may have been one of these same iron fowlers.

The fowlers mentioned by White undoubtedly refer to so-called "stock fowlers," another name for the perrier, a breech-loading piece mounted on a swivel which was quite widely used on ships and in small fortifications in the last part of the 16th century. (See Manucy, 1949, frontispiece, for illustration of perriers mounted on swivels set in a wooden bench.) The "small ordnance" mentioned by White may refer to such guns as rabinets or falconets, or possibly even to small arms.

The foregoing references to later ordnance are pertinent to the present discussion in suggesting the type of artillery that might have been taken ashore from ships in 1585 for use in the new fort. The guns almost certainly would have been mounted on swivels, possibly set in heavy posts sunk in the ground, or in special timber mountings. Concluding that some type of small ordnance was used in the fort, the most logical location would have been in the two large, pointed salients commanding the approach on the waterside. Each of the gun platforms (barbettes) constructed in these two salients would have accommodated a single swivel gun. In placing embrasures in the 1950 reconstruction, the type of cannon probably used in the fort was not given sufficient consideration. Gun platforms are a likely feature, but embrasures would not have been used if the armament consisted of swivel guns.

The pentagonal southern bulwark poses more of a problem in our reconstruction. At first it was assumed to have been built in this rounded shape to enclose a small building, or possibly a powder magazine. However, using the standard parapet profile, there is barely room for even the firing step, let alone a building. The possibility of ordnance being mounted in this feature was also considered. It is reasonable to picture cannon mounted on the waterside of the fort, but it would seem more advantageous to man this third salient with soldiers using firearms and pikes.

Above-ground features at the two entrances are the most problematical of any part of the earthwork. Contemporary instructions for small earthworks deal only with overall plans and profiles and furnish no detailed information on entrance treatment. The two works illustrated by White are helpful, but not too applicable to the Roanoke Island structure.

The Cape Rojos work has an unprotected entrance, but its location on the water's edge, and the position of the flanking ditches, made any special protective feature unnecessary. This would not seem to be the case with our fort on Roanoke Island. Archeology furnished no clue whatever, either for additional earthworks or a wooden gate. Negative evidence, of course, rules out a palisade or an extension of the ditch. Even assuming that the earth removed from the interior area of the fort had been used to form a masked entrance by continuation of one of the regular parapets, it is difficult to fit in such a feature. Although the ditch terminates symmetrically on either side of the assumed entrance, it is possible that sufficient earth was at hand to have closed the salient, thus forming a pointed head similar to the other two. This would have left the opening alongside the southern bulwark as the sole entrance to the fort.

Another, and possibly more acceptable suggestion is that a barricade (cheval-de-frise) was placed across this entrance, as shown in the artist's sketch (frontispiece). Although sometimes made of iron, in this instance it undoubtedly would have been constructed of sharpened poles inserted in a log.

The secondary entrance is hypothecated solely on the ground that the ditch was interrupted at this point for no other apparent reason. This might well have been a semi-masked entrance, with the earthwork extending past the end of the ditch. Space was not adequate, however, for a full parapet, so a section of palisade was used in the reconstruction to bring the parapet up to the height necessary to provide protection. A gate at this narrow entrance would seem to be indicated, although no archeological evidence of posts was found. However, this particular area was one of several which could not be explored as thoroughly as desired because of the roots of recently cut trees (fig. 13). A gate,





FIGURE 26—Stabilization of the fort

Upper—Planting grass on the reconstructed fort to stabilize the slopes. *Lower*—Same view, taken 1 year after reconstruction, with grass on the slopes well established.

therefore, has been shown in the conjectural sketch (frontispiece), but was not included in the 1950 reconstruction.

Even more problematical than the entrances are the structures within the fort. Assuming this to be the fort referred to by Lane in his account of the Indian plot, it contained at least one building with thatched roof. Extensive disturbance in recent years of the central portion of the fort made it difficult to recognize or follow out the two features that appeared to be of an early period, and possibly having some connection with the structure, or structures, within the fort. As discussed earlier (p. 17), these features provided little archeological evidence concerning original structures, other than their probable orientation.

If our reconstruction of the parapet, with firing step, is reasonably accurate, a rectangular building oriented at right angles to the main fort entrance could not be longer than the overall length of the two early intrusions, or roughly 36 feet. Using this length, the width would have to be quite limited to provide passage space at the corners. One long, narrow structure would probably be better suited to the varied requirements than a shorter, wider one. Moreover, it would permit a lower roof and more open space at the front and back. Also, a single long building would be more economical of space than several isolated ones. In our highly conjectural "paper" reconstruction (frontispiece), we have shown one long, narrow building, of typical half-timbered construction, with thatched roof. It is drawn to occupy approximately the space of the early intrusive features (features 18A and 18B, fig. 13), with an overall size of 12 by 36 feet.

Physical reconstruction, in the present instance, came ahead of the final report and the "paper reconstruction." This would have been the case even though the report had been completed more promptly, since in restoring the fort, earth excavated from the ditch was thrown up to form the parapet much in the manner of its original construction, though probably much more slowly. This does not mean that we depended entirely upon a "re-enactment" approach for the design of the reconstructed parapet. Reference to military manuals of the period provided the necessary details for finishing the rough parapet formed from the excavated earth. Other than the parapet and related features, no attempt was made to reconstruct other elements, such as framed structures within the fort and entrance devices. In addition to lack of archeological evidence for a glacis, its omission in the reconstruction was sound, since contemporary and later manuals show earthworks both with and without a glacis.

In summary, then, we can say that the ditch itself is an accurate restoration; the main section of the parapet is a reasonably authentic reconstruction. However, to provide a slope that could be maintained, the inner face of the parapet was finished less steep than it probably was originally. This necessitated lowering the parapet slightly (from estimated 6 feet to 5.5 feet) to provide earth for the greater width at the base. Another practical, but more conspicuous, concession was the sodding of all earth surfaces, a necessity if the fort was not to suffer the fate ascribed to the structure abandoned by the colonists in 1586. The gun platforms and embrasures are the least authentic of the reconstructed features, since there was no guidance for their location. The embrasures, in fact, probably should be eliminated.

Additional features, needed to provide a more complete reconstruction, are cannon, the thatched storehouse-guardhouse, and entrance devices. It may be desirable and possible at some future time to provide these missing units. Another contribution to realism would be to restore the surroundings to their original appearance, which would necessitate clearing of all vegetation within musket range of the fort. It was not feasible to do this when the fort was restored in 1950, nor is it likely to be done when the area is fully developed, in view of current plans for interpretation and public use of the site.

FIGURE 27—Later views of the reconstructed fort

Upper—Looking west after grass is well established.
Lower—Looking east toward the main entrance; interpretive exhibit is in the foreground.

Search For The Habitation Site

ARCHEOLOGICAL EXPLORATION

Having confirmed the traditional fort site, the next step was to locate the habitation area, believed from the records to have been set apart from the fort. Discovery of the break in the fort ditch, interpreted as the major entrance to the fort, suggested that the settlement would likely be found to the west, and it was in this direction that most of the exploratory trenches were dug. Fortunately, the main portion of the National Historic Site then lay on the west side of the fort, although permission was secured to do some testing on private property to the east.

It was realized that any remains of the type of structures presumably erected here would leave very little physical evidence. In spite of the one documentary hint that brick was used (Glavin's deposition; see Quinn, 1955, p. 4), no house foundations were expected, although there was hope that chimney footings would have been sufficiently well built to have left some trace. The main type of evidence expected, however, was concentrations of building and occupation debris which would show the approximate location of individual house sites.

A second type of remain that seemed even more likely and more easily identified if found, was that of the palisade around the settlement. Since this was reported by White upon his return in 1590 to have been a "high palisade of great trees," there was little doubt that the remains would be recognized, if crossed by an exploratory trench.

By now it is obvious that neither of the two types of evidence being sought was discovered in the excavating carried on thus far. However, other significant information came from the explorations which may serve as a guide in further search at some future time. Although anticlimatic, a description of these explorations in search of the habitation site will be presented here.

Nature of Evidence Sought

Quite naturally, but unfortunately, in none of Ralph Lane's extensive correspondence from the "new Fort in Virginia" is there mention of the number or the kinds of houses built. His previously quoted report on the Indian plot implies that the houses were covered with thatch. That is all! Then, when the 1587 group arrived, John White's narrative furnishes slightly more information, but still not much. (Quinn, 1955, p. 524.)

Not a great deal can be inferred from this account, although White seems to have considered the houses sufficient in number for the 1585 colony, and adequately constructed. "Neather" (nether) rooms overgrown with melons would imply that the houses were two-storied, although the upper story may have been more of a loft than a full second floor. Quinn suggests that bricks might have been used for footings and chimneys and that the walls were either wattle and daub in a timber framework, or timber alone (Quinn, 1955, p. 902). Principal evidence for brick is the deposition of David Glavin, or Glande, who claimed that the 1585 colonists started making brick and tile for the fort and houses as soon as they had disembarked (Porter, 1943, p. 29; Quinn, 1955, p. 835). Thomas Hariot's report on Virginia states that there is good clay for making bricks and oyster shell for lime (Porter, 1943, p. 29; Quinn, 1955, p. 367). In addition, at least one brick fragment that is almost certainly not modern was found at the fort. (See page 22.)

When White returned in 1590, all of the houses had disappeared (White says "taken downe"). The palisade around the settlement was standing, however, and appears to have been quite a substantial structure, built of large logs and laid out on a conventional fort plan, with bastions. This palisade must have been erected after White returned to England in the summer of 1587, and possibly was necessitated by the increasing trouble with Indians. The logs would have been set vertically in a trench, certainly not less than 3 or 4 feet deep. The palisade might, or might not, have had the added protection of a ditch on the outside. It would possibly have had a firing step of earth or a wooden platform on the inside or it may have simply employed firing slots at gun height between the upright logs. In any event, archeological evidence of such a structure should be quite clear, even after some 360 years.

Method of Testing

The most efficient scheme would possibly have been either to run continuous test trenches radially from the fort site, or to cover the area completely with trenches at 50- or 100-foot intervals on a regular grid. Neither was possible because of trees, roads, and buildings. Moreover, the sand dunes along the shore prevented any exploration in what may be a critical area. It was necessary, therefore, to locate the trenches in what would appear from the map (fig. 28) a most haphazard fashion, but every effort was made to have them overlap so as not to miss the palisade. In addition, selected areas were tested with a metal detector, but this proved quite impractical until some of the soil was removed, because of the modern iron objects scattered over the area, particularly bottle caps. The excavated earth was not screened, except in a few suggestive spots, but it was planned to screen when,

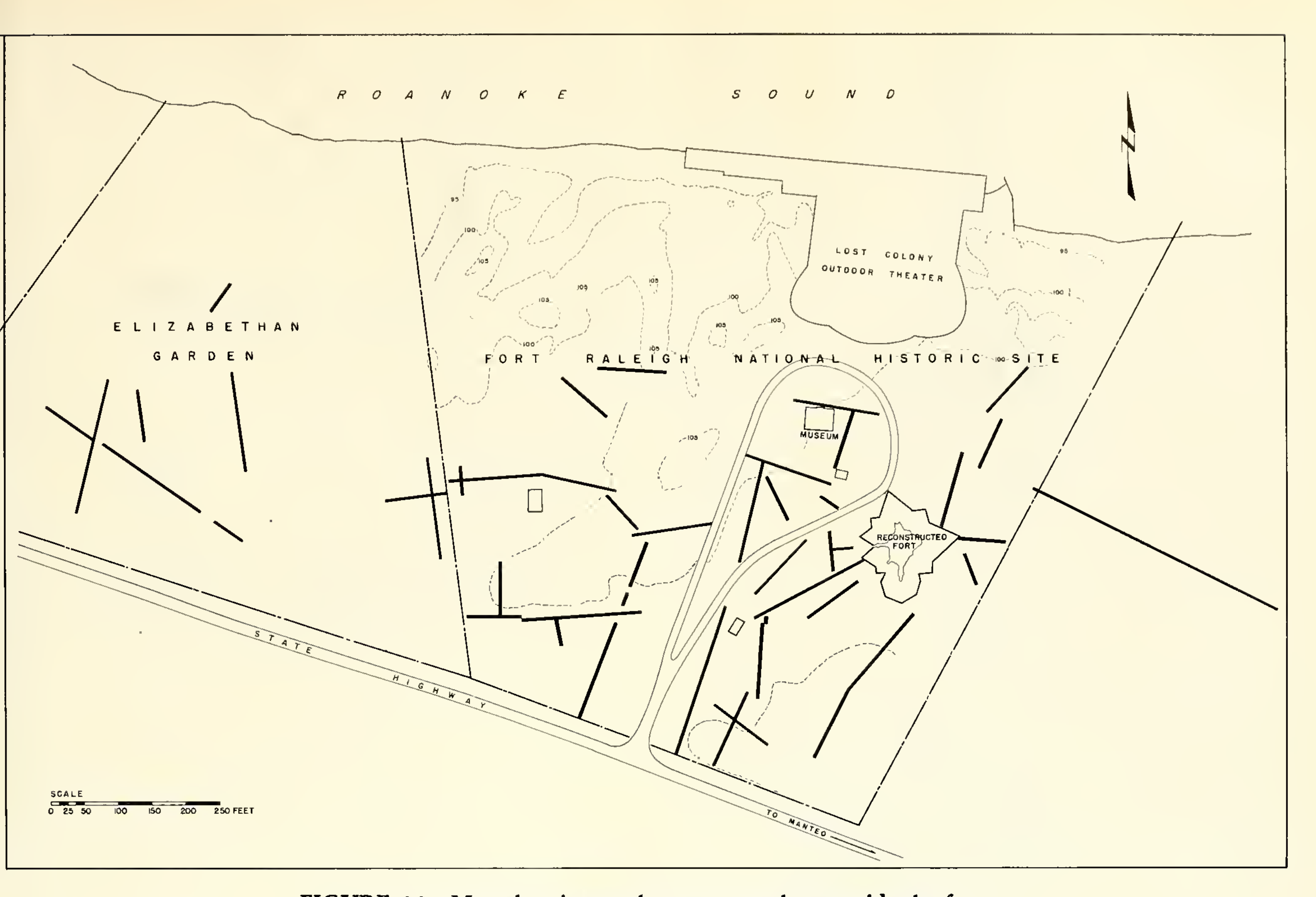


FIGURE 28—Map showing exploratory trenches outside the fort

and if, an area was encountered that gave any indication of being a house site.

During the first season, the test trenches were concentrated in the area relatively close to the fort. A more distant area was explored the following year, even to the extent of doing some checking on private property to the east. It will be seen from the map, however, that this did not constitute exhaustive, or fully adequate, coverage of the area, even in the restricted area just west of the fort. There was opportunity to do some additional testing farther west in 1953 during grading operations for the Elizabethan Garden on the property beyond the historic site. Here, again, dunes and vegetation limited the area that could be tested, and it would have been almost pure luck if anything of significance had been found. In all, 3,320 lineal feet of test trenches were excavated outside the fort site during the three seasons.

The exploratory trenches were mostly 5 feet wide, a width that seemed necessary in order to make certain that remains, if encountered, would be recognized. Test trenches in the Elizabethan Garden area were reduced to a width of 3 feet. In addition to dictating the location of trenches, the heavy vegetation slowed down the work considerably, not only because of the live roots encountered, but also because of having to scrutinize the innumerable remains of ancient, rotted tree roots to make sure that these were not manmade intrusions. In each trench the earth was removed in layers, roughly 2 inches at a time, until the yellow-brown subsoil was reached. Intrusions into this sandy clay subsoil were easily recognized; the main problem was distinguishing natural from manmade features.

It was soon discovered that almost the entire area was covered by a moderately recent deposit of wind-blown sand. This deposit is several feet deep in the dune area paralleling the shore, but even the thinner deposit successfully sealed off the older original topsoil. This would have been a most convenient archeological aid had anything of importance been found. Enough items were discovered on the pre-dune ground level, however, to demonstrate quite clearly that the sand had accumulated after the period of the settlement. In view of this, the first step in excavating the test trenches was to remove the sand layer, checking for intrusions through it into the older layers below. The upper few inches of the original topsoil was then examined very carefully for superficial structural remains and building or occupational refuse. After removing the uppermost part of this old topsoil layer, and before reaching the undisturbed subsoil, the trench floor was gone over carefully with a metal detector. This was done in order to check for building evidence, in case any clues were found, in the way of metal, before the critical layer was entirely destroyed. Although a few nails were

recovered by this process, it produced no important finds.

Only one intrusive feature of significance was found in all the trenching. It was a rectangular pit, roughly 3.5 by 4.5 feet and 4.5 feet deep, located about 100 feet west of the fort. The bottom 2 feet of the pit was a solid mass of charcoal, made from unsplit pine sticks from 1 to 4 inches in diameter. Some showed ax marks on the chopped ends, and none of the original pieces appeared to have been much longer than 1 foot. There was evidence of heat on the sides and bottom of the pit, but no ashes were found. Quite clearly, this pit was dug and used for the express purpose of making charcoal, although this is not known to have been a common method, even in those days. No cultural material was found in the pit, so, short of possible future dating by the tree-ring method, its age cannot be determined. However, considerable age is suggested by the thick accumulation of humus over the the depression above the pit, and the fact that the sand layer, although thin at this point, extended over it. This find is of particular interest when we recall that the Spanish tell of the English having a forge at the fort in Puerto Rico (Porter, 1943, p. 27; Quinn, 1955, p. 740).

In contrast to the condition found in the trench on private land to the east of the fort, there was no evidence that either the historic site or the Elizabethan Garden tracts had ever been under cultivation. The normal condition here consisted of a dark humus layer, just below the sand deposit, of some 6 inches in depth, fading gradually into the light-brown sandy clay subsoil. The forest duff on top of the old humus zone was relatively thick, and, of course, by now mixed with sand. The wind-blown sand deposit had developed a very thin humus layer, indicating its relatively recent deposition. Also of importance is the fact that no humus zones appear within the sand deposit, even in the deepest dunes, showing that this entire accumulation took place continuously over a given span of time, and then ceased, presumably with the development of a vegetative cover. This is quite different from the situation observed in the high dunes farther east and south along the shore of Roanoke Island, where humus layers appear at intervals, indicating periods of interrupted deposition.

Indian pottery fragments were relatively frequent, although like those of European origin, more concentrated in the area near the fort entrance. They were not sufficiently prevalent, however, to suggest an occupation site, nor was any other form of refuse found that would indicate even a temporary campsite, other than the remains of campfires in the partially filled fort ditch. Like the few remains of European origin, the Indian sherds were all in, or on, the old topsoil below the sand deposit.

OBJECTS OF EUROPEAN ORIGIN

Iron

Only two iron nails of the type that might date from the settlement period were found in the entire length of test trenching (Nos. 24 and 51), although conceivably more might have been recovered if the earth had been screened. However, the procedure of testing trenches with a metal detector after removal of recent forest duff materially decreased the chances of overlooking metal objects or fragments. Each of the two specimens was in the original topsoil below the sand deposit, suggesting but not proving, that they date from an early period.

A small fragment of a large hollow cannonball (No. 28) was found in the original topsoil about 125 feet west of the fort. It appears to be too large a ball (estimated diameter, 8 inches) to have been used by the colonists, and more likely dates from the Civil War, in spite of being beneath the sand layer. However, the sand deposit at this point is very thin, in addition to being in an area of intensive use during the past 25 years.

A questionable fragment of iron (No. 45) was found just beneath the thin sand layer about 250 feet southwest of the fort. It was so badly rusted and broken that very little could be determined. The remaining portion was roughly 6 by 9 inches in size and just over one-quarter of an inch thick. Since it cannot be identified, and since its position in the ground does not guarantee any great antiquity, this object is of little significance.

Another iron object, whose origin and identification are both doubtful, is an iron ball (No. 100), reportedly found some quarter of a mile east of the fort and donated to the Fort Raleigh museum by Otis Dough. What makes it of special interest is that superficially it appears to be a small cannonball of the size that would have been used in a falconet, a type of small cannon that might well have been among the colonists' military equipment. However, its hammered surface and a small hole, possibly threaded, makes this identification questionable. It is 2 inches in diameter and weighs just over 16 ounces.

A very well-preserved wrought-iron ax, from the site, is of special interest (fig. 30). It is in the possession of Magnum Weeks of Alexandria, Va., who acquired it from his father, Stephen B. Weeks, historian and collector of North Carolina documents. In an article on the Lost Colony, Stephen Weeks states that the object was dug up on the fort site during the Civil War (Weeks, 1891, p. 125). The specimen fits the period of the settlement, and there seems to be no reason to question its origin.

Metal, Other Than Iron

Lead Musket Balls. A total of 3 lead musket balls were found in the explorations outside the fort (Nos. 7, 15, and 53), all lying in the original humus layer. Another specimen (No. 101) was picked up in the sand near the amphitheater entrance. Three of these have a diameter of 17 mm., or roughly 14 gauge, the size ball normally used in a 12-gauge musket, a likely size for an English gun of the late 16th century. The fourth ball has a diameter of only 14 mm.

Brass Buckles. Fragments of two brass shoe buckles came from 74 feet and 600 feet west of the fort (No. 27 and No. 44, respectively). Each was in the old topsoil, but the latter was under 2 feet of sand deposit, showing clearly that it

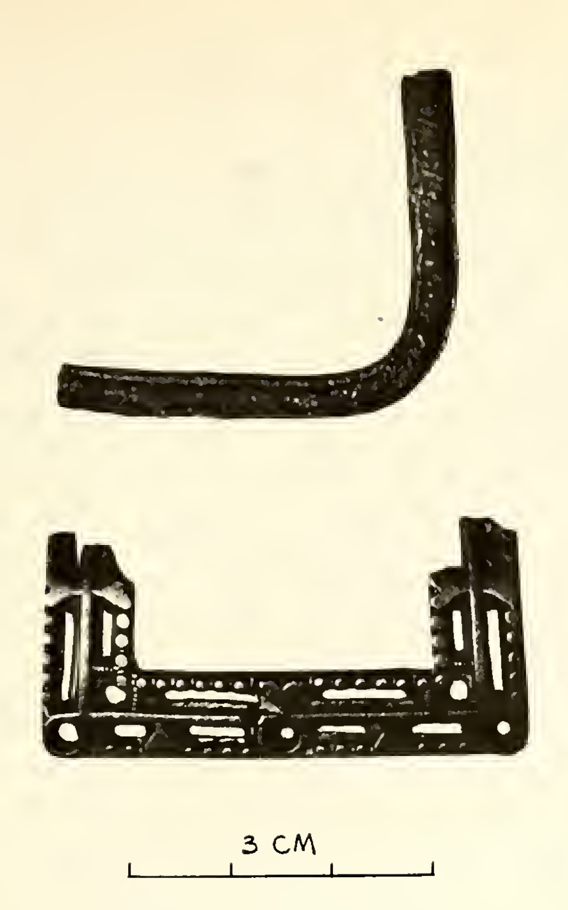


FIGURE 29—Brass buckles

Two 18th-century brass buckle fragments found in trenching west of the fort.
Upper—No. 44.
Lower—No. 27.

predates the dune developments. Although one of the buckles is much more elaborate than the other (fig. 29), they both date from the 18th century.

Brass Finial. One of the best preserved objects reputedly from the site is a brass finial (No. 25; fig. 30), said to have been found several years ago in the roots of an overturned tree about 50 feet west of the fort. It is possibly the top of of an andiron and could well date from the 16th century. An early characteristic is the fine beading around the central ball. As commonly found in candlesticks, andiron finials, and other brass objects of this and later periods, it is made in two vertical sections and braised along the joints.

Ceramics

One of the most intriguing groups of ceramic fragments is that of a very thin, dense ware, probably from small, triangular goldsmith's crucibles, of a type common in the 16th century. Four very small fragments (No. 13) were found 200 feet northwest of the fort, and a single small sherd of the same ware (No. 37) came from just outside the fort entrance. These small fragments may all be from a single crucible, or possibly two, and show no evidence of having been used. As in the case of the copper nuggets, a gold-

3 CM

FIGURE 30—Objects found at the site by others

Upper—Brass finial (No. 25) said to have been found in the roots of an overturned tree near the fort entrance. Height 23 cm.
Lower—Wrought-iron ax found at the site in 1863. Overall length 12 cm. *Courtesy, Mangum Weeks.*

smith's crucible brings to mind Joachim Ganz, the mineral expert in Lane's group.

One Spanish olive jar rim sherd (No. 40) was found just outside the fort entrance, and may well belong with the similar fragments described from the fort. Two other pieces of similar ware (No. 47) were at the top of the sand layer 400 feet west of the fort. They are the "exceptions that prove the rule" that objects clearly of the settlement period are to be found below the sand deposit. A single pottery fragment of a different ware (No. 39) came from just outside the fort entrance, and may be a form of stoneware, although it is not glazed. It is a very hard, dense, uniformly gray material, wheel-turned, and with a gray, lightly burnished exterior surface. This sherd resembles examples of plain cooking vessels found in Spanish sites in Florida.

Part of the base of a coarse, lead-glazed earthenware vessel (No. 111) was found in the Elizabethan Garden area. It is very similar in appearance to the hemispherical bowls usually attributed to Pennsylvania. Several specimens of similar appearance and size, and dating from roughly 1740–75, have been found at Colonial Williamsburg.

Clay Building Products

In all, three brick fragments of old appearance were found in the trenching outside the fort. Two (Nos. 21 and 36) appear to be from typical handmade bricks, similar to the one fragment from the fort ditch, but no dimension can be secured for either. The third (No. 110) is a small fragment of a typical Dutch brick,[18] tannish-gray in color, and 1⅜ inches thick. It was found in the Elizabethan Garden area, while the other two came from 250 feet north and 140 feet west of the fort, respectively.

Clay Tobacco Pipe

The fragment of a clay tobacco-pipe bowl (No. 46), found 475 feet northwest of the fort in the old topsoil under 1.3 feet of sand, is of particular interest. Although the fragment is too small to determine the original size and shape of the bowl, it is almost certainly post-1700.

Gun Flint

Based upon experience in excavating other sites with military association, gun flints could well have been expected here. Only one was found, however (No. 38), suggesting that the matchlock was the predominant musket used by the Raleigh colonists. This is given added support by the gun flint itself, which, because of its size, is more likely to have come from a pistol than a musket. It is an irregular rectangle averaging 20 by 25 mm.

[18] A small, hard brick made in Holland; yellow to gray in color; used extensively for floors and hearths. Also known as "Dutch clinkers."

CONCLUSIONS

The one important conclusion from the explorations carried on thus far is that the habitation site has not been located. Its possible location and proposals for further archeological exploration will be discussed in the final chapter. Although very few objects of proper provenience were found within the area tested, the total number of objects of probable settlement association would have been more impressive if every square foot of the area explored had been carefully excavated. Still, the frequency was not what would be expected from a habitation site, occupied even for as short a period as this one may have been.

Contrast this situation with that encountered in the test excavations on St. Croix Island in Maine.[19] In less than 700 lineal feet of trenches, only 2 feet wide, large quantities of brick chips, broken bricks, pottery fragments, nails, glass, pieces of copper vessels, charcoal and ashes, and similar debris were found in every part of the site, and this all came from a small military post established in 1604 and occupied for less than 1 year. At our site it is probable, of course, that the Indians salvaged everything that appealed to them. Even they, however, would not have picked up pieces of broken pottery—certainly not bones and oyster shells. Also, in view of Lawson's early 18th-century description of the site, the Indians apparently did not carry away everything.

Regardless of the frequency of artifacts, one could certainly expect to find some recognizable evidence of construction and human occupation. Even though the houses were probably of wood and other perishable materials, a house site should leave some traces, such as nails and other construction refuse, possibly a hard-packed floor, and kitchen refuse in the way of animal and bird bones and shells from oysters and clams. Miscellaneous household litter, such as broken dishes, would have been thrown out, or buried in refuse pits. It would take very few broken pottery vessels to have produced far more than the trivial number of fragments that actually came to light.

But in our search for the habitation site we were not called upon to put "all of our eggs in one basket." From the outset we considered it much more likely that remains of the palisade would be found. A palisade would be the sort of structure that would almost certainly leave clear-cut evidence in the ground. Even though one side of the palisade might have been missed in dodging around trees with our test trenches—a "thousand-in-one" chance—it is hardly conceivable that some other part of it would not have been picked up. The failure to find any trace of the palisade, therefore, is the strongest evidence we have that the habitation site was not located within the area explored.

The one find that gave us most hope was the little charcoal pit. In the light of subsequent evidence, we finally had to associate this feature with the fort, rather than the vil-

[19] Excavated by the National Park Service in 1950.

lage. It might very well have been used by the garrison at the fort to make charcoal for a small hand forge to repair tools and weapons. After all, it was only 100 feet from the fort entrance.

The principal information gained from the test trenching, aside from the negative evidence on the location of the colonists' houses, has to do with the relative age of the windblown sand deposit. There seems to be little doubt but that this sand, as deep as 12 feet in places, accumulated since the time of the settlement and that it was deposited without interruption, once it started. Moreover, finding the 18th-century tobacco-pipe and shoe-buckle fragments on the old ground surface beneath some 2 feet of sand strongly suggests that this deposition is not earlier than the late 18th century.

Another argument against its being immediately post-settlement is that no Indian pottery was found in the sand, or on it, although Indians are known from finds at the fort to have been here in later years. On the other hand, the deposition ended at least as long ago as the oldest trees growing on the dunes, some of which are almost certainly over a hundred years old. All evidence, therefore, supports the conclusion based upon the study of 19th-century maps and charts (pp. 6 and 52) that the major erosion and correlated sand deposition west of the fort occurred during the second and third quarters of the past century.

Indians—Before, During, And After

ARCHEOLOGICAL EVIDENCE

Information about the Indian neighbors of the Roanoke settlers is well covered in contemporary accounts. In fact, narrating the problems that arose with these neighbors, and describing their odd customs, would appear to be one of the main interests of those few members of the various expeditions whose writings have come down to us. This was natural, and the detailed ethnographic descriptions are appreciated by both historians and anthropologists. But, in addition, we wish these writers and artists had left us a record of their own settlement and fort.

For the present purpose, we are concerned with the aborigines only in respect to what the records and the archeological finds reveal about the settlers and their settlement. The records tell us very little, while the archeological finds probably relate mostly, if not entirely, to the Indians who were in the vicinity before and after the brief English occupation.

Indian objects and remains, both older and younger than the fort, were found, but not in sufficient quantity to suggest that this was ever more than possibly a seasonal campsite or an outlying farming tract. The same is true of the area explored outside the immediate fort site. In his archeological survey of the Carolina Coast, Haag designates the Fort Raleigh area as an Indian site, although he recognizes that "nothing was found that suggested concentrated village midden . . ." (Haag, 1958, p. 63). In fact, Haag assigns site numbers to three separate areas on the north end of the island: one for the Northwest Point (R 1), one for the entire northern shore (R 3), and one for the area under discussion in the present report (R 2). But he is not willing to pin down any defined area as a concentrated site in the usual sense (Haag, 1958, pp. 62–64).

Excavations at the fort show quite clearly that Indians were there both before the colonists arrived and some years after they had left. Occasional pottery fragments were found in the original topsoil beneath the parapet, within the parapet remnant, and in the earth from the parapet that had washed back into the fort ditch. The edges of these sherds are not fresh breaks, but show every sign of having been exposed to the elements before being buried by, or in, the parapet. In addition to these pottery fragments, two objects of pre-fort date were found. One is the basal portion of a chipped quartzite implement, probably a projectile point (No. 72). The other is a fragment from the stem of a clay tobacco pipe (No. 61) which closely resembles the stem of the whole pipe (No. 98) from the fort ditch.

Also of pre-fort origin is the campfire (feature 5) under the parapet, which contained ashes and charcoal mixed with the original sandy topsoil in an oval depression roughly 2 by 3 feet (fig. 13). There were no animal bones, oyster shell, or similar refuse, but there were several fire-fractured stones, possibly used for supporting the typical pointed pots. One of these stones appears to have been intentionally shaped in the form of an ax or scraper (No. 58). Its surface contains several deep scratches as though used as a sharpener (fig. 31). The edges, however, show no sign of chipping or grinding, and it cannot be identified with certainty as a fabricated implement. The fact that the parapet remains, at this point about 7 or 8 inches thick, extended uninterrupted across the campfire, showed quite clearly that it predates the fort.



FIGURE 31—Stone object from Indian hearth

One of several stone fragments (No. 58) found in the pre-fort Indian hearth (feature 5). Although showing evidence of use in the surface scratches, this was not an intentionally shaped artifact.

Equally clear is the evidence that other aboriginal remains are later than the fort. Remnants of two campfires, or hearths, were found in the partially filled ditch, each containing charcoal and ashes, with the earth below baked hard and red from the heat. One of these hearths, feature 50–11, was near the bottom of the ditch and contained fragments of a restorable pot (No. 70–73–77; fig. 33). Another restorable pot (No. 68–74–76; fig. 33) was at the same level, but about 10 feet distant. This pot may have been used in the nearby campfire, but thrown aside when no longer serviceable, whereas No. 70–73–77 was simply left in the hearth.

A second hearth, feature 50–20, also clearly of post-fort date, was found at a higher elevation than feature 11, just

over 2 feet above the bottom of the ditch. Unless the ditch here had filled up more rapidly, this feature must date from a much later period than feature 11. Like the earlier one, it contained ashes and charcoal, but no other refuse of any type—not even a broken pot.

Two objects of Indian origin are of particular interest because they are more closely associated with the colonists than any of the other non-European specimens. Both a small pot and a tobacco pipe were found at the very bottom of the fort ditch. Since the evidence is fairly definite that a few inches of earth had washed into the ditch very shortly after, or possibly even during, the fort's construction, these two objects are clearly identified with the fort. The nearly whole pot, No. 89, is described below. The clay tobacco pipe (No. 98; fig. 32) is reddish-brown, of the tubular type, with the bowl slightly bent upward. It is 98 mm. long, with a 7 mm. stem hole.

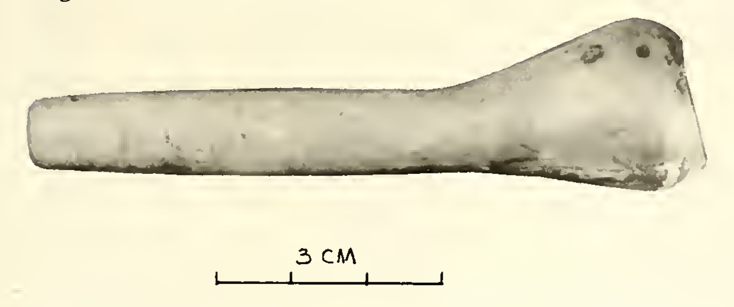


FIGURE 32—Indian clay tobacco pipe found at the bottom of the fort ditch

Similar pipes have been found at Indian sites on Roanoke Island and the Outer Banks.

The pottery fragments found in the test trenches away from the fort cannot be dated in relation to the settlement, although, as mentioned previously, they were all on, or in, the old topsoil below the sand deposit. A concentrated group of sherds (No. 26) was found about 75 feet west of the fort entrance, but very near the surface. They appeared to represent a complete, or nearly complete, pot, but were too badly broken to make restoration feasible. The basal portion of a typical pointed globular pot was found in one of the Elizabethan Garden test trenches (No. 108). It was resting in an upright position a foot below the original surface, but in the rotted remains of an old tree root. No other sherds were near it.

In addition to the sherds, only two fragments of Indian origin were found in the test trenches. A rough stone (No. 109), probably a hammerstone, was found in the 1953 tests at the Elizabethan Garden site. Later, during construction, workmen found a fragment of a clay Indian pipe below a sand deposit of some 6 feet (Haag, 1958, p.89). It was similar to the whole specimen found at the fort, but possibly with somewhat more angle at the elbow.

Pottery

Except for the pot from the Elizabethan Garden, all of the Indian pottery from the site is a simple-stamped ware, either shell- or grit-tempered, and generally globular in form. The single exception is fabric-impressed, shell-tempered. Pottery type terminology will not be further confused by the introduction of type descriptions and names for the ware, or wares, found at Fort Raleigh. A simple-stamped, shell-tempered ware, which generally fits the shell-tempered pottery from this site, has been described by Blaker (1952) and Evans (1955), to which the type name "Roanoke Simple Stamped" has been given. Haag, on the other hand, shows commendable restraint in not making use of type names, but furnishes a very adequate description of the wares from this general region, with tempering constituting the basic differentiation (Haag, 1958).

In view of the very limited number of complete, or nearly complete, vessels previously known from this region, it may be of greater value to describe each of the restored pots than to consolidate the data from the total collection into generalized type descriptions. The latter was done by the author some years ago, with the assistance of Dr. Charles Fairbanks, but it is now observed that this description, insofar as the shell-tempered ware is concerned, varies in some respects from the published Blaker and Evans type descriptions. This is just what is certain to happen under these circumstances, and is all the more reason for refraining from setting up additional types, and naming them on the basis of material from a single site with a relatively small sample. On the whole, in describing the examples of complete, or nearly complete, pots from Fort Raleigh, elements that conform to published descriptions will not be repeated.

Pot No. 108. The lower portion of a pot was found upright in the taproot mold of a tree in the Elizabethan Garden area some 1,100 feet west of the fort. It appears to be the major part of the pot, which conformed in shape to the two more globular examples from the fort, but smaller than either. Since none of the rim was found, details of rim, neck, and shoulder construction are not known, although there is a suggestion of slightly more shoulder than on the pots from the fort. It is shell tempered, and the entire surface is decorated with fabric impression, generally similar to examples shown by Haag for other Coastal North Carolina sites (Haag, 1958, p. 74; fig. 3). There was no smoothing of the fabric impression, even toward the base, as was commonly done on the simple-stamped pots. Body thickness is 6 to 7 mm., increasing to about 10 mm. at the pointed base. Maximum body diameter is 170 mm. Both the body and surface color is a uniform dark gray.

Pot No. 89. This shell-tempered pot was found in one piece, with about one-third of the upper portion missing. It must date from the period of the fort's construction, since it was found at the bottom of the fort ditch. Method of manufacture was coiling, as was all the pottery from this site, and in color, texture, and hardness it conforms to published descriptions of this general type.

The most interesting features of this pot are its shape and the application of the stamping. It is relatively small, being 200 mm. tall, with mouth diameter varying from 135 to 150 mm., and is the characteristic "elongated, globular" shape,



FIGURE 33—Indian pots from the fort ditch

Left—Smallest of three pots (No. 89) found in the fort ditch. A pot almost identical in shape and size, represented by a group of sherds found just west of the fort entrance (No. 54), is grit tempered, whereas No. 89 is shell tempered.

Center—Medium-sized pot (No. 70–73–77) restored from sherds found in a campfire built by Indians near the bottom of the fort ditch (feature 50–11). This ware is grit tempered, whereas the pot at right, found nearby and at the same level, is shell tempered. (See figure 36 for rim variations of this pot).

Right—Largest of three Indian pots from the fort excavation (No. 68–74–76). This pot, restored from some 130 sherds, was found in the fort ditch at the same level and near the campfire (feature 50–11).

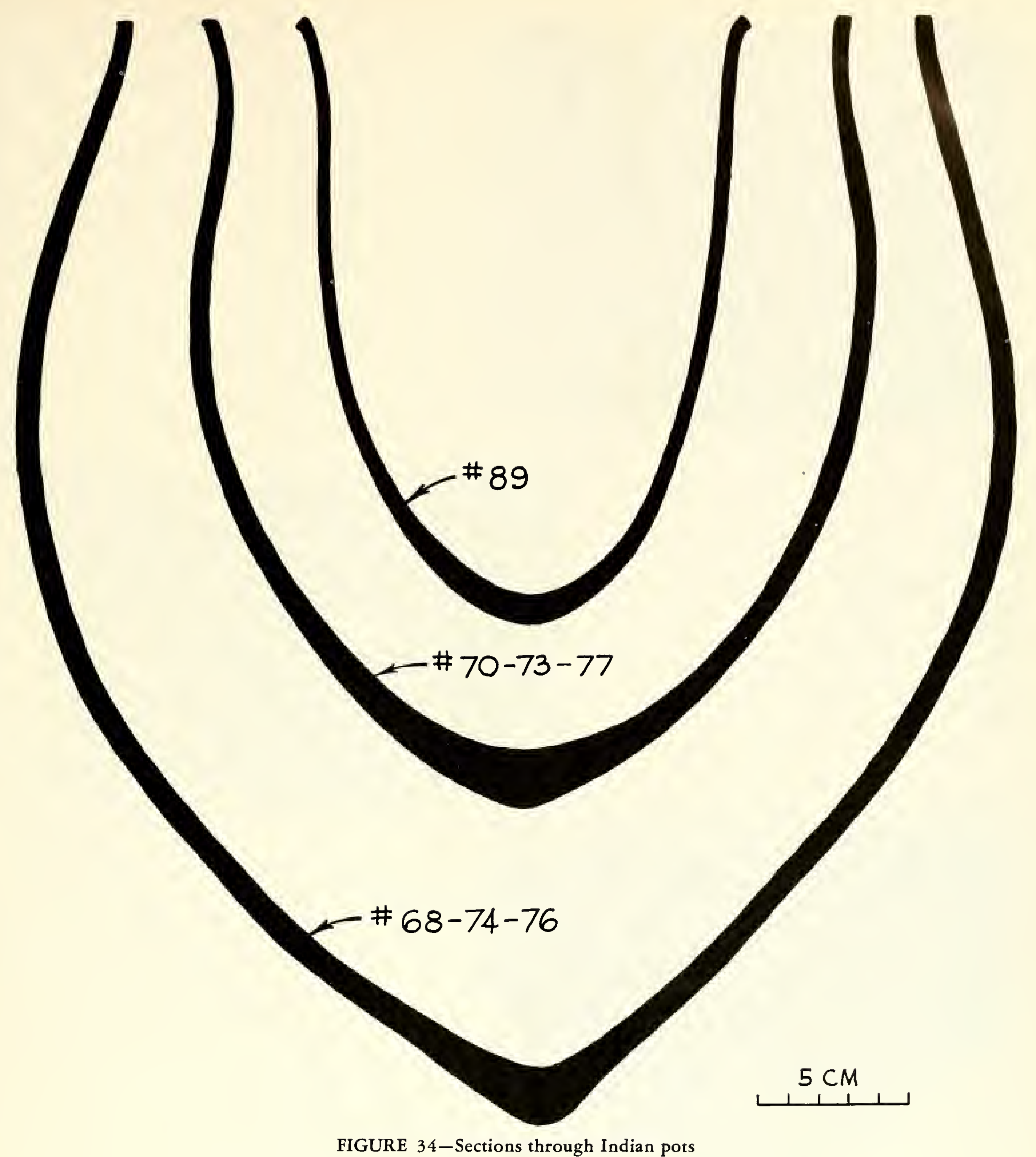
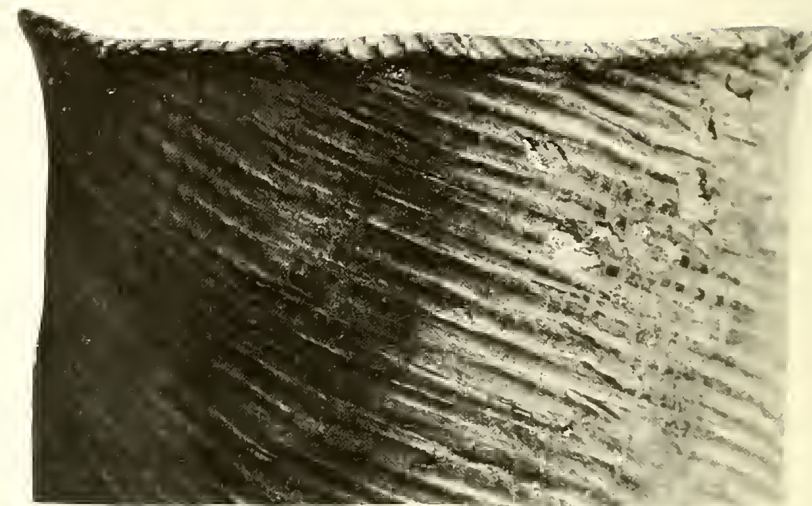


FIGURE 34—Sections through Indian pots





Upper—Part of the rim of No. 68-74-76, showing typical pitted surface of shell-tempered ware. Note that the stamping is nearly horizontal, as compared with the more slanting impressions on the other two pots from the fort.

Center—Upper part of No. 89, showing heavy stamping impressions and the stamped lip.

Lower—Base of No. 68-74-76, showing the typical pointed base and the irregular, overlapping surface stamping.



FIGURE 35—Surface decoration of Indian pots

with conoidal base. There is almost no constriction at the neck, and the slightly flaring rim has been flattened by simple stamp. The body has an average thickness of 4 mm., increasing toward the bottom to 10 mm. at the base.

Stamping covers the entire exterior surface, with some smoothing near the bottom. Lands and grooves are fairly uniform and much deeper than most of the sherds from the site. The impressions are at an angle of about 30 degrees with the rim, which is a flatter angle than much of the pottery of this type described from other sites.

Pot No. 54. Comparison of No. 89 with No. 54 is especially interesting. The latter pot is represented by several sherds, but not sufficient for complete restoration. In probable size, shape, color, texture, and body-wall thickness, it is almost identical to No. 89. The principal difference is that it is grit tempered, rather than shell, the tempering material being medium to coarse quartz and quartzite sand, used rather generously. The stamping, rather than being applied in one direction without overlapping, as in No. 89, runs in different directions, although usually meeting the lip at about 45 degrees. The stamping was smoothed in places, leaving irregular scraped impressions as though a coarse reed comb or brush had been used.

Pot No. 68–74–76. The sherds used in restoring this pot, as previously mentioned, were found at the same level in the fort ditch as the hearth (feature 11), but some 10 feet away. Although over 130 sherds were involved, the restoration was accomplished quite satisfactorily. As the illustrations show, this is a relatively large, conoidal vessel, but with more body bulge than No. 89, and with a definite mammiform base. The flat, or slightly rounded, lip shows no evidence of stamping and is very slightly flaring.

The shell tempering has almost entirely leached out, leaving flat cells and surface depressions. The buff to brown surface shows some smudging, but in most respects the ware corresponds to published descriptions. The stamping is less regularly applied than on No. 89, and in this respect, is much more typical of the other examples from the site. Although the stamp impressions overlap considerably, they are generally parallel with the rim, an untypical characteristic. As on the other whole pots, the entire outer surface is stamped, and, like most of the others, there was some post-stamp smoothing, particularly toward the base. Body thickness varies from 5 to 6 mm. at the rim to 7 or 8 mm. over most of the body. The thick, irregular base, apparently molded out of a single mass of clay, is as much as 15 to 18 mm. thick in places.

Pot No. 70–73–77. This grit-tempered pot resembles No. 54 in many respects, except for size, shape, and application of stamping. It is the only pot actually found in the remains of a campfire in the partially filled fort ditch. In general shape and most other respects, it resembles the large pot, No. 68–64–76, found nearby, and at the same level. It is grit-tempered, however, the tempering consisting of fairly large pieces of quartz and/or quartzite. The lip is similar to No. 54 and 89, having been flattened with the stamping implement. The base is almost pointed, but lacking the reverse curve so pronounced in No. 68–74–76.

The rim is a little more flaring than most of the Fort Raleigh pottery, but the most interesting thing is the great variety in rim sections at different points. Sections at five places along the rim are shown in figure 36. Almost any of these, if found as an isolated rim sherd, might have been described as a characteristic for a pottery type, yet they all occur on a single vessel.

As on whole, or nearly whole, pots from the site, stamping covers the entire exterior surface, but, unlike the other examples, there was no post-stamp smoothing on any part of the vessel. The stamping is carefully applied in a continuous pattern from the shoulder up, with much less overlapping than usual, almost as though it was intended as a decoration. Also of interest, the direction of the impressions are from left to right above the shoulder, but reversed on the lower portion, suggesting that the pot was inverted when paddling the lower half. They have a 30° slant just under the lip, which increases to 45° on the shoulder. The squared lip is similar to No. 54 and No. 89.

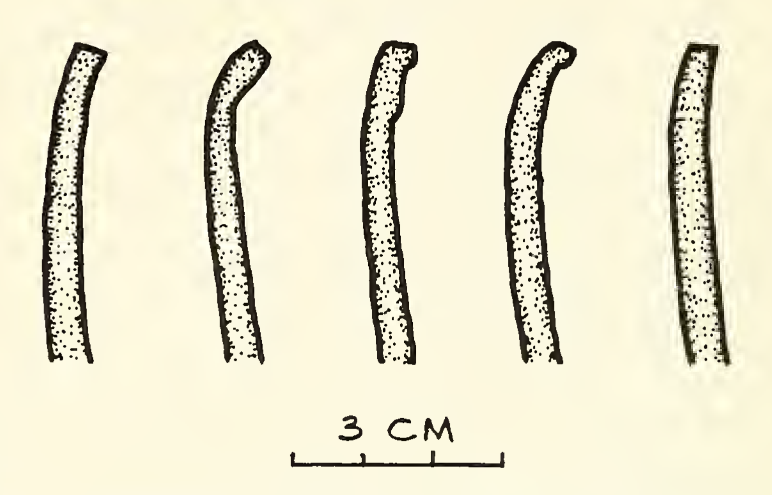


FIGURE 36—Variations in pottery rim sections

Sections at five points on the rim of pot No. 70–73–77, showing the wide variation in the form of a single vessel. Outer surface at right.

Discussion of Pottery

On the basis of his extensive survey of the coastal North Carolina region, Haag is inclined to place the shell-tempered ware later than the sand, or grit, tempered, although he recognizes that on many sites they are contemporaneous (Haag, 1958, p. 104). Analysis of the specimens from the Fort Raleigh excavations shows no temporal difference between the two types, but it must be remembered that this was not a conventional Indian site of long duration. Of the pre-fort sherds, exactly half fall in each temper group. Approximately the same proportion holds for those recovered in the test trenches outside the fort. The three restorable pots from the fort ditch, presumably post-fort in age, are of both types. There is no evidence from the Fort Raleigh site,

therefore, in support of Haag's very tentative suggestion that in this area generally shell tempering may be later than grit tempering. Nor is there any evidence as to the total time span represented by the pottery from the site. We can only conclude that both shell- and grit-tempered, simple-stamped wares of a fairly uniform shape, although varying considerably in vessel size, were in use by the Indians of this locality over an indeterminate period prior to and after the colonizing attempts of the late 16th century.

CONCLUSIONS

The remains encountered in the excavations at Fort Raleigh attributable to Indians are of importance to archeologists concerned with that subject. However, they tell us essentially nothing relative to the problems of primary concern at the site; namely, positive identification of the fort, exact date of its construction, location of the settlement area, and what happened to the colonists after 1587.

The Search Goes On

Two important conclusions have been presented in the preceding pages: (1) The excavated earthwork was built by the Raleigh colonists, and (2) the settlement site has not been located. The basis for the first conclusion is positive archeological findings, much more satisfactory to an archeologist than negative findings on which the second conclusion is based. In the present instance, negative evidence can mean either that the habitation site lies outside the area explored, or that there was, in fact, positive evidence which was not recognized as such. A third alternative—that the exploration of the settlement site might yield no positive evidence—is too farfetched to even consider, either in reference to the completed explorations or to those that may be carried out in the future.

What is the next step? If funds were available and the property were accessible, one could start digging methodically in ever widening circles beyond the area already explored and hope that eventually identifiable remains would be encountered. But archeology is too costly to permit such a search for anything so evanescent as the remains of the "Cittie of Ralegh."

If the cost is so great, one might reasonably ask, "Why keep looking?" Why not simply accept the logical conclusion that the settlement area was probably some place west of the fort, but not too far? In the end we may be compelled to do just that, but no one would be satisfied with this way out, except as a last resort. We seem to be faced, therefore, with continuing the search, but any further excavating should receive the best advance planning possible. In this final chapter, I will review both the documentary and archeological evidence and then attempt to outline a practicable program of exploration.

SUMMARY OF EVIDENCE

From Contemporary Records

a. Amadas-Barlowe Expedition of 1584: Primarily a reconnaissance survey; no evidence that a fortification or other structures were built.

b. 1585 Expedition: Spanish relations a major factor; primary objectives were to plant a colony and establish a military base on the Atlantic Coast.

   (1) "Note" on planning expedition (Quinn, 1949): Instructions specify large pentagonal earthworks enclosing the town.

   (2) Expedition contained experienced fortification builders (Quinn, 1949, pp. 219–220).

   (3) Plan of two earthworks erected on Puerto Rico en route to Virginia recorded by John White; one similar in size and plan to the Roanoke Island fort, was built by Lane with a small force in about 2 days (Quinn, 1955, pp. 184–185; fig. 22).

   (4) Lane made his base camp at Port Ferdinando (inlet near Roanoke Island) while the fort and settlement were being built on island, and where he proposed building a sconce; three letters from Port Ferdinando dated August 12; first letter from "the new Fort in Virginia" dated September 3 (Quinn, 1955, pp. 192–206).

   (5) Lane's *Discourse on the First Colony* (Quinn, 1955, pp. 255–294).

      (a) Refers to Roanoke Island as "the place of our settlement or inhabitation," but gives no details. Another reference is simply "at our home Roanoke."

      (b) Describes plan of building sconces at two-day marching intervals from Roanoke Island to Chesapeake Bay, with a major fort at northern terminus, to which he would move the settlement.

      (c) Indians give colonists plot of ground for farming; no location data.

      (d) Plot to destroy settlement, including "them of forte, as for us at the towne."

      (e) Superiority of armed Englishmen over Indians reflected in Lane's statement that "ten of us with our armes prepared, were a terrour to a hundred of the best sort of them."

   (6) Hariot's *Briefe and True Report* (Quinn, 1955 pp. 314–387).

      (a) Describes Roanoke Island "where we were seated" as "being fifteene miles of length and five or sixe miles in breadth" (a slight exaggeration) and fully wooded.

      (b) Refers to iron deposits as being a certain distance from "the Fort or place where we dwelt."

   (7) Maps and charts.

      (a) Sketch map attributed to John White (Quinn, 1955, facing p. 215); no developments shown on Roanoke Island.

      (b) White's pictorial map engraved by De Bry (fig. 38); shows main Indian village on island, but no indication of English fort or settlement.

      (c) White's map of Eastern North America (Quinn, 1955, facing p. 460); single dot at north end of island is presumably symbol for Indian village,

although Porter suggests it may represent the colonial settlement (Porter, 1952, p. 12).

(d) White's map of Eastern North America (Quinn, 1955, facing p. 461); larger scale than (c), but shows same Indian village symbol.

(e) Published map with same title as (d), engraved by De Bry (Quinn, 1955, facing p. 462); many similarities to (d); contains no indication of settlement or fort.

c. Grenville's 1586 Expedition.

(1) Account states only that "he landed 15. men in the Ile of Roanoke" after "finding the place which they inhabited desolate" (Quinn, 1955, pp. 479–480).

(2) White later records a Croatoan Indian's account of what happened to the 15 men (Quinn, 1955, pp. 528–529). Indians hid behind trees "neere the houses, where our men carelessly liued." Indians set fire to house in which Englishmen took refuge; Englishmen handicapped by thick trees, "retired fighting to the water side, where their boate lay, with which they fled towards Hatorask."

d. 1587 colonizing venture.

White's account (Quinn, 1955, pp. 515–538). Describes search for Grenville's party and visit to settlement, but furnishes no location more precise than that it was at "north end of Island."

Accounts of Post-settlement Visits

a. 1590 search for the "Lost Colony."

White's account (Quinn, 1955, pp. 598–622). Describes visit to abandoned site on Roanoke Island and abortive search for colonists. Seemingly precise information as to location of settlement site, but is hard to adjust to actual conditions on the ground.

b. Investigations sent out from Jamestown (p. 3).

(1) Search of 1608: Nothing helpful; site probably not even visited.

(2) 1653 visit: Saw "ruins of Sir Walter Ralegh's fort." but recorded nothing as to size, construction, or exact location.

c. Lawson's visit, c. 1701 (p. 3): Refers to "ruins of a fort," but gives nothing helpful on present problem.

d. Lossing's visit in 1850 (p. 3): Reported only that "slight traces of Lane's fort" were visible; no description or location data.

e. Bruce's visit in 1860 (p. 3): Fairly detailed description of ruins.

Post-settlement Maps

a. Maule map of 1716: Does not show fort; marks creek at present Manteo site (Shallowbag Bay) as "Town Creek."

b. Moseley map of 1729 (fig. 6): Resembles Maule map generally; "Gibson Creek" in place of "Town Creek."

c. Collet map of 1770 (p. 53): Shows conventional fort symbol at approximate location of traditional fort site, labeled "Fort."

d. Mouzon map of 1775 (p. 52): Apparently copied from Collet; shows same "Fort." (For explanation of "Pain" in conjunction with "Fort," see Porter, 1943, p. 40.)

e. Several other 17th- and 18th-century maps show Roanoke Island, but none are of value in present study.

f. Fulton map of 1820: First accurate engineer's survey, sufficiently detailed to provide reliable information on extent of erosion (fig. 6).

g. Several maps by Army Engineers prepared in connection with proposed plan to reopen Roanoke Inlet. Following examples are representative: Graham, 1827 (fig. 6); Franklin, 1852; Simpson, 1870. None of the above mark the fort; some show a windmill on shore just west of fort site.

h. Civil War maps: Two official war maps, 1862 (*Official Records of the Union and Confederate Armies*, 1883; *Official Records of the Union and Confederate Navies*, 1897). Neither shows traditional fort; one is fairly accurate as to shoreline; other clearly indicates sand hills extending eastward from fort area along north shore of island.

i. Brown map of 1896, prepared for Roanoke Colony Memorial Association (fig. 5): Provides exact location of shoreline opposite fort at that date for comparison with present shore.

j. Various U.S. Coast and Geodetic Survey charts and aerial maps prepared during last 30 years show change in shoreline and development of sand spit at Otis Cove (fig. 37).

Land Records and Related Materials

a. Acts of 1715 and 1723 provided for development of a town known as "Cartaret," presumably at site of present town of Manteo; no reference to old fort (Clark, 1906, Vol. 23, p. 89; Vol. 25, p. 201).

b. Land records dealing with property on which fort is located can be traced back to 1803 from county records; first mention of fort is in conveyance to Roanoke Colony Memorial Association in 1896, which refers to "the old Fort Raleigh Tract."

Archeological Evidence

a. Evidence does not preclude 16th century settlement date for excavated structure; closest dating from artifacts is late 16th century or 17th century.

b. No structural remains or other evidence of building sites in area explored; scattered objects of European origin not judged sufficient in number for habitation area.

c. No evidence found of palisade believed to have been constructed during second settlement period.

d. No surface material suggestive of settlement site found outside of explored area.

RE-EXAMINATION OF THE EVIDENCE

In discussing the problem of the settlement's location with David Stick, the "Outer Banks Historian," Stick made the almost shocking statement that, in his opinion, the "Cittie of Ralegh" was not located immediately around the fort, but more likely farther south toward the present town of Manteo.[20] Among other arguments, Stick pointed out that from as early as 1715, in every effort to establish a town on Roanoke Island, the preferred site was on Shallowbag Bay. This was a logical choice in view of the island's dependence on water transportation, and eventually the town of Manteo did develop in that locality. But the implication is that tradition, as well as a good harbor, may have been a factor in the continued insistence on the selection of this particular site for the principal town on Roanoke Island.

Stick's thesis would be more convincing had any of the official acts or land records made specific reference to the historic site. The act of 1723 for establishing the town of Cartaret refers to "three hundred Acres of Land lying on the No. E't Side of the Said Island, commonly called Roanoak old plantation" (Clark, 1906, Vol. 25, p. 201). However, this is too general a reference, and applies to too large a tract to be helpful in the present discussion.

When we review the contemporary accounts, it becomes apparent that were it not for the actual remains of the fort no two persons would agree on the location of the original fort and settlement, except that it was at the north end of Roanoke Island. But we do have the fort, so we are compelled to keep the houses within a reasonable distance, in spite of the apparently negative archeological evidence. One solution to this dilemma is to consider the possibility that the traditional fort, commonly referred to as "Fort Raleigh," may not be Lane's "New Fort in Virginia." In fact, such a suggestion was heard from time to time prior to the excavating, tradition notwithstanding. But archeology seemed finally to have dispelled most doubts, even though it did not provide positive evidence beyond the fact that the fort was of the correct period.

In view of the repeated published opinions that the settlement lay immediately to the west of the traditional fort site,[21] it would be quite natural to assume that the matter had been settled and further search would not justify the cost, or that it should be made in that one direction only. It is to offset any such conclusion that the subject is opened up again here. But just having an open mind and a willingness to follow up any clue that comes to light is not enough; there must be reasonable limits set on how far afield one is justified in going, either in following such clues or in planning an orderly archeological search.

If any dependence can be put on contemporary accounts, we must conclude that the 1585 colonists, under Lane's direction, built a fort at the north end of Roanoke Island and erected cottages in the same general vicinity, and probably close by. The 1587 group repaired the deserted settlement and added to it, presumably enclosing it with a strong palisaded wall. The problem boils down, then, to answering these questions: Is the excavated and restored earthwork the one associated with the settlement? If so, what are likely, or possible, locations for the houses? If not, what is this earthwork, and what are the most likely locations for the settlement and associated fort?

Nowhere in Lane's rather extensive writings is there any mention of physical features relating specifically to our problem of locating the settlement, or of identifying the excavated fort. John White's narrative of the 1587 voyage is a little more helpful. He states that they went up the sound to Roanoke from Hatteras and came ashore at the spot where Grenville had left 15 men the year before. From White's secondhand account of the fate of the 15 men, it would appear that the landing was not too far from certain houses in which these men were living. It is reasonable to assume that they would have used the recently abandoned settlement, or some part of it. This does not fit other evidence, unless we assume that the boat landing was within a reasonable distance of the settlement.

Then, after failing to find Grenville's men at the landing place, White's party "walked to the North ende of the Island, where Master Ralfe Lane had his forte, with sundry necessarie and decent dwelling houses . . . about it." If the settlement was within a reasonable distance, one might ask why White waited until the next morning to go up there. However, his own record states that it was sunset when they landed, and one could not blame then for waiting until daylight, especially having come upon the "bones of one of those fifteene, which the Savages had slaine long before."

White's account of his return in 1590 is the next reference pertinent to the present discussion. He relates that "we put off from Hatorask, being the number of 19 persons in both boates: but before we could get to the place, where our planters were left, it was so exceeding darke, that we ouershot the place a quarter of a mile." Quinn and other historians locate this place where the planters were left as Shallowbag Bay, presumably the same point at which Grenville had left the 15 men in 1586. There seems to be no clear evidence that the place where the settlers were left refers to a boat landing at some distance from the settlement rather than in its immediate vicinity. On the other hand, White makes two other references to the place where the planters were left, but each time associates it with the settlement and fort. This confirms other evidence that the settlement and boat landing were not too far apart.

After going a quarter of a mile beyond the place where the planters were left, White's party "espied towards the North end of the Iland the light of a great fire thorow the woods, to the which we presently rowed: when wee came right over against it, we let fall our Grapnel neere the shore. . . ." This account by White must be considered

[20] Some 20 years ago, Porter concluded that the "entire settlement area probably extended from Lane's Fort to Baum's Point or present Manteo" (Porter, 1943, p. 38). However, he was referring more to the area farmed and otherwise used by the settlers, for he definitely places the actual dwelling houses "near the fort" (*ibid.*, p. 29).

[21] See, for example, in addition to the earlier sections of this report, Harrington, 1949, p. 45; Porter, 1952, p. 34; Quinn, 1955, pp. 614 and 902.



FIGURE 37—North end of Roanoke Island c. 1950

Upper—Aerial map (USC&GS Photograph No. 49-0-1793).
Lower—Part of USC&GS plat No. T-9159 (advanced print of the revision incorporating survey data secured in 1950).

in the light of the previous discussion as to whether the planters were left near the settlement or at some other point, such as Shallowbag Bay. If the former, and if we accept the site of the settlement as being west of the traditional fort, the search party would not have been in a position to look toward the north and see a fire. On the other hand, they could have looked westward, or even southwestward, and seen a fire through the woods near, or toward, the north end of the island. The problem posed by White's account in regard to the direction of the fire is solved even more satisfactorily by accepting the suggestion that the settlers were left in the vicinity of Shallowbag Bay. It does not, however, reconcile the definite evidence that the place where the settlers were left was near the settlement, unless we take the drastic step of moving the settlement site to the vicinity of Baum Point.

The next morning they went ashore and found the remains of a grass and duff fire in the woods, and then walked "thorow the woods to that part of the Iland directly ouer against Dasamongwepeuk. . . ." This would have put them some place on the west side of the island, at least around the northwest point, since Dasamongwepeuk was on the mainland about at the location of present-day Mann's Harbor.

The party is then said to have "returned by the water side, round about the Northpoint of the Iland, vntill we came to the place where I left our Colony in the yeere 1586. In all this way we saw in the sand the print of the Saluages feet . . . and we entred vp the sandy banke vpon a tree, in the very browe thereof were curiously carued these faire Romane letters CRO: . . . ." The distance they walked back along the shore could have been anyplace from 1 to 2 miles, which is consistent with the "all this way" statement.

After pondering the meaning of the three Roman letters, the party "passed toward the place where they [the planters] were left in sundry houses." Having looked around this desolate scene, they "went along by the water side towards the poynt of the Creeke to see if we could find any of their botes or Pinnisse." This reference to the point of the creek is possibly the key to our whole problem. It would be helpful if we could be sure what White meant—whether the head, the mouth, or a point on the creek. We cannot even be sure that "creek" meant the same to him that it does to us today. Porter interprets the place where the boats were left as Baum Point on the north side of the entrance to Shallowbag Bay (Porter, 1943, pp. 29 and 38), while Talcott Williams places it on Alder Branch in an attempt to get it closer to the fort site (Williams, 1895b, p. 55). Quinn, on the other hand, suggests that it was in the general vicinity of the feature now known as "Otis Cove," a narrow, marshy area three-eights of a mile to the east of the fort site (Quinn, 1955, p. 615). We will return to this possibly crucial point after completing White's story.

Continuing with White's account, "At our returne from the Creeke, some of our Saylers meeting vs, tolde us that they had found where diuers chests had bene hidden, and long sithence digged vp," presumably by the Indians. White went immediately to where other chests had been hidden in an old trench. These too had been looted. Quinn suggests that the trench may have been the ditch of the original fort (Quinn, 1955, p. 615). Having seen all they cared to on Roanoke Island, and certain that the colonists would be found at Croatoan, White records that "we returned to our Boates, and departed from the shoare towards our Shippes," which lay at anchor outside the inlet.

In analyzing these accounts, it is important to consider the question of erosion and any other topographic changes that have occurred since 1590. Contemporary maps will be of no great help, since they were all drawn at small scale and vary too much within themselves to provide precise and reliable data on topography. White's maps are surprisingly accurate as to general shape of the island and the major shoreline features, but are too small in scale to be useful for the present purpose. It is of interest to note, however, that he shows fairly accurately the two bulges on the west side of the island, now known as Weir Point and Northwest Point. He also shows the two major features on the east coast (Shallowbag Bay and Broad Creek), and it is clear from the way these are depicted that White would have considered all of the land north of Shallowbag Bay as comprising the north end of the island.

As pointed out earlier, comparison of relatively accurate surveys made over the past century shows some change in the shoreline at the north end of the island, with the major erosion at the very northern, or northwestern, tip. (See figure 4.) Otherwise, the topography has not changed conspicuously during the past 100 years. This would, of course, have some bearing on the interpretation of White's report of the woods fire in relation to the settlement site. Topographic changes also have a bearing on identification of two points: the "place where our planters were left" and the "point of the creek."

First of all we should consider the possibility of there having been a feature in the vicinity of the present fort that would qualify as White's creek. Otis Cove fits the specifications, both as to conformation and location. But even though it has today the appearance of having been there for many years, all evidence points to its being of relatively recent origin. As stated before, most, if not all, of the erosion on the north end of the island has occurred to the west of the fort site. Apparently as the bank washed away, sand moved along the shore toward the east, gradually building the spit that forms the present cove.

One of White's maps shows a definite cove, or bay, about midway along the north shore of the island, whereas the other two show only a very minor indentation. The De Bry engraving, on the other hand, shows a very definite feature here, about as conspicuous as Shallowbag Bay (fig. 38). Although one of De Bry's engravings is at much larger scale than White's maps, based upon the delineation of other features, one would hesitate to accept his outline of the island too literally. Even so, we cannot deny that the contemporary cartographers showed a cove or indentation in the general vicinity of the fort.

Until the period of accurate surveys by the Army Engineers, the several post-settlement maps and charts, mostly dating from the 18th century, do not appear to be too reliable

The arriual of the Engliſhemen II. in Virginia.

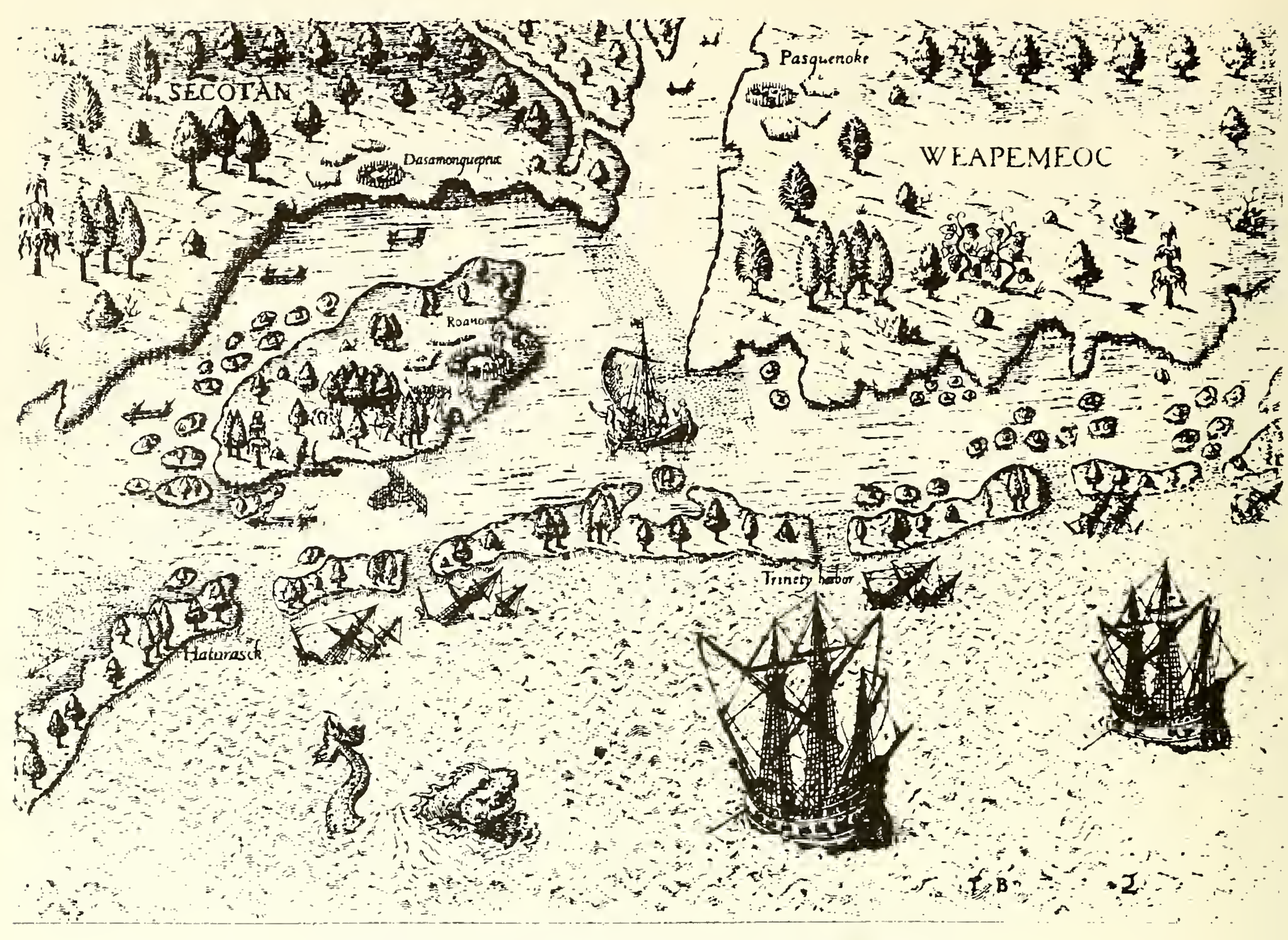


FIGURE 38—John White's pictorial map of Roanoke Island

as to the outline of Roanoke Island. By 1820, when we have our first modern map (Fulton map), there is no suggestion of a cove between Shallowbag Bay and Northwest Point, although there was a definite projection just west of the fort site, marked on this and later maps as Etheridge Point (fig. 6). As discussed earlier, these maps also show a continuous, high sand ridge along the north shore from Mother Vineyard to the vicinity of the fort. None of these 19th-century charts, either those of the Army Engineers or the U.S. Coast and Geodetic Survey, mark the fort remains. This is not too surprising, since they were primarily hydrographic surveys or navigation charts, rather than land maps. They do show conspicuous topographic and cultural features that might serve as reference points in the surveys or as navigation aids, such as the windmill which stood near the shore just west of the fort site.

The principal value of these 19th-century maps is in showing the extent of erosion and where it occurred. It is quite clear that a conspicuous point of land existed just west of the fort (Etheridge Point). This extension into the sound, rather than Northwest Point (Mann's Point), probably suffered greatest from erosion during the past century or more. Although one of White's manuscript maps, as well as De Bry's engravings, is quite definite in this regard, it is difficult to reconstruct a cove in this general vicinity from a study of postsettlement maps.

On the other hand, another of White's maps corresponds very closely to the early 18th-century Mouzon map in showing a definite point (Etheridge Point?), with almost no suggestion of a cove. The possibility of a feature along this stretch of shore at the time of the settlement, which would qualify as a "creek," although not impossible, seems quite

unlikely, in the light of the cartographic evidence. The next question is whether White's creek can be associated with any present-day feature.

Other than Otis Cove, there is today no feature that could possibly qualify as a creek along the north shore of the island between Northwest Point and Baum Point. As figure 37 shows, dunes are continuous along the north shore over much of this distance. Although the low dunes lying to the west of the fort appear to be of more recent origin, probably having moved southward as the shore eroded, the higher dunes to the east of the fort are of much greater age (p. 6).

In addition to Shallowbag Bay, labeled a creek on the early 18th-century maps, two features in the northern part of the island could qualify as creeks, Alder Branch and Dough's Creek (figs. 4 and 37). Alder Branch is scarcely a creek today, but apparently was more prominent during the past century. It is conspicuously shown on a Civil War map of the island, and, according to Talcott Williams, was navigable for a mile from its mouth. He argues that this creek was the one used by the colonists because of its closeness to the fort site and more convenient than Shallowbag Bay when approaching the island from the north. (Williams, 1895b, p. 55.) It is of interest that Williams confines his discussion to Alder Branch versus Shallowbag Bay as the two contenders rather than Otis Cove, which from all evidence was of no consequence in Williams' day.

Williams' case for Alder Branch breaks down on two counts. White specifically states that from the point they reached on the west side of the island they proceeded "by the water side, round about the Northpoint of the Iland" to the "place where I left our Colony." Secondly, there is no evidence that the island was approached from the north. Certainly the accounts, as well as the location of the inlets, indicate that the colonists would have approached from the northeast, east, or southeast.

The other feature that would most nearly meet the present-day concept of a creek, is Dough's Creek which flows from near Mother Vineyard into Shallowbag Bay at the present town of Manteo. Although partially filled in today, older residents recall when it was navigable by small boats for some distance above Manteo, and it might well account for the location of the tar kiln recently identified on the property of Albert Q. Bell (fig. 4).[22]

As conditions exist today, no point on Dough's Creek could have been reached conveniently by going "along by the water side," as recorded by White. But the topography has changed materially since 1950. There is geological evidence that the water level has been rising at the rate of about 1 foot every century, which would mean some 4 feet since 1585 (Brown, 1959, p. 16). This would not only be a contributing factor in the rapid erosion of sandy banks along the exposed northern shore, but would suggest that there may have been dry land where many marshes occur today.[23] Some, or all, of the large marsh and swamp area between Mother Vineyard and Shallowbag Bay possibly may have been dry land at the time of the Roanoke settlements.[24]

If this were the case, a point near the mouth of Dough's Creek would seem to provide a more satisfactory boat landing than Baum Point, suggested by Porter (1943, p. 38). Moreover, Dough's Creek qualifies better as a creek than the expansive Shallowbag Bay, which is nearly 1 mile wide at its mouth. It is dangerous, however, to interpret terms used 400 years ago on the basis of modern usage. Shallowbag Bay was, in fact, called a creek at one time, and was so labeled on early 18th-century maps.[25] Baum Point is certainly a conspicuous point that would have offered ample shelter to small boats. Everything considered, therefore, Baum Point probably warrants the vote for the feature in question over a point on Dough's Creek.

The suggestion of equating Shallowbag Bay or Dough's Creek with White's "creek," and Baum Point or a point on Dough's Creek as the oft-mentioned boat landing, only partially solves the "creek" problem, for it still leaves the question of distance and direction to the fort from the boat landing. However, it makes more acceptable the drastic suggestion hinted at earlier in this report (p. 49) that the traditional fort was possibly an outlying earthwork, rather than Lane's "new fort," and that the main fort and settlement might have been at some other point where it would fit the various references more satisfactorily.

We know that Lane was fond of the small earthwork, referred to by him as a "sconse," and that he definitely planned on "ensconsing" the water route to Chesapeake Bay. Although he apparently never got around to carrying out this plan, might he not have built one of these little earthworks near the north shore of the island? The time and trouble of building it would have meant little to Lane.

The ease and almost matter-of-fact way a similar earthwork was built at Cape Rojos supports this suggestion. That particular fort was about the size of the one on Roanoke Island; it was built in a matter of 2 days, with only a handful of men, and for a very transient use. The Roanoke Island fort, however, would not have been quite so easy a task, but even if Lane could have built such a structure in a few days, an entirely plausible reason for having a small, outlying earthwork in this location is not too easy to come upon. It could very well have had some advantage in later trouble with the Indians, possibly headquarters for a small garrison responsible for guarding the fields that had been turned over earlier by the friendly Roanoke tribe. It must be remembered that by the spring of 1586 the colonists were at open war with the Indians and that skirmishes were being fought on the island, as well as on the mainland.

[22] A trench was cut through this feature by the writer in January 1960, but no cultural material or other evidence was found that would date it. From its large size and similarity to remains of old tar kilns in other parts of the state, we can assume that it dates from the 19th century. Association with the Raleigh colony does not seem likely.

[23] This requires further study. It is possible that the marshes were there in 1585, but that they subsequently filled in from deposit of tidal silt and decaying vegetable matter, thus being kept in balance with the rising water level of the adjacent sound.

[24] In support of this suggestion are the early 19th-century maps which show very little marsh in this area (fig. 6).

[25] The Maule map (1716) labels it "Town Creek," while the Moseley map (1729) marks it "Gibsons Creek."

A second fort would seem to explain the apparent ambiguity of the two contemporary accounts, one of which places a fort at some distance from the settlers' homes, while the other has the fort and houses in proximity. This does not provide too sound an argument for the traditional structure being an outlying sconce, however, since it was Lane who referred to "them of the forte, as for us at the towne," If he had built a secondary fortification of this sort, it is reasonable to believe that he would have referred to it as a sconce, not as "the fort." The evidence in this connection, therefore, does not necessarily add weight to the suggestion that Lane may have built two separate and distinct defensive works on Roanoke Island, although it is suggestive.

Another bit of evidence bearing on the present discussion, though too tenuous to be exploited in support of the "two-fort" suggestion, is White's reference to Lane's fort being found "rased downe" just a year after the first group had abandoned it. There would have been some erosion of an earthwork, but it is difficult to visualize such a structure having been demolished, as the account implies, either by natural forces or by the Indians. A palisade of logs, however, although it probably would not have decayed and fallen in a year's time, was susceptible to fire, as demonstrated a few years later at Jamestown. The only reasonable conclusion one can draw from the records is that the strong palisade found in 1590 had been built by the second colony, and probably after White left the island in the summer of 1587. It is conceivable, however, that there had been such a palisade around the earlier village, and that it was rebuilt, and possibly enlarged, after White's departure.

If, for the moment, we consider the traditional fort as an outlying sconce, the second, and even more pertinent, question is where the main fort and settlement might have been located. Possibly the most plausible location, particularly in view of the evidence regarding the marshes and boat landing, is in the general vicinity of Mother Vineyard (figs. 4 and 37). It fits the account by White of having "overshot" the place by a quarter of a mile and seeing a fire through the woods toward the north end of the island. It also takes into account, for what it may be worth, the older traditional site marked at one time by a tree stump on the shore of Shallowbag Bay (p. 5). The only objection is the distance they would have had to walk back "by the water side" to the settlement.

One of the obstacles to our analysis of data such as this is our inability to put ourselves in the place of these people. Their apparent unconcern over walking several miles through woods and marsh is quite incomprehensible to us, and colors our interpretation of the accounts of all early explorers. Actually, the distance would not have been over 3 miles, and could have been even less, depending upon what spot is taken as the starting point on the west shore. Their subsequent hike down to the creek and boat landing, on which they also followed the shore, would have been less than 2 miles. In any event, they would have had to walk this total distance no matter where we place the settlement, unless the "creek" and boat landing is placed near the traditional fort in the general vicinity of present-day Otis Cove.

The Mother Vineyard area also fits the story of Grenville's 15 men who retreated from their houses to their boat, although the distance seems a little long; a matter of about 1 mile through the woods.

As stated earlier, if we did not have a perfectly good fort of approximately the right date at the northwest end of the island, and had to rely entirely on historical records, we would undoubtedly place the settlement and fort in the general vicinity of Mother Vineyard. Obviously, with no concrete evidence in support of the proposal, we cannot put the settlement in that area and leave the fort 2 miles away. A way out has been suggested, but in the face of tradition and published conclusions of competent historians, I have not felt justified in arguing for it too vigorously. It has been presented only as a possible solution to the conflicting evidence on the location of the settlement and for consideration in planning further archeological explorations. Certainly such a proposal could never be accepted unless the remains of a larger fort, preferably in association with a palisaded enclosure, were found through archeological explorations, or unless new documentary evidence turns up.

RECOMMENDATIONS FOR ADDITIONAL ARCHEOLOGICAL EXPLORATIONS

We must now face the question of whether further archeological exploration is warranted. If agreed that it is, the problem of where and how to explore must then be considered

It is almost inconceivable that the matter could be dropped at this indecisive point. All aside from the startling new proposal presented almost apologetically above, the consensus seems to be that the search should continue. Important as the fort was, it does not represent the real essence of this first English colonizing venture. To a park visitor, a fort alone implies that the aim of these expeditions was purely military, rather than the establishment of a permanent colony, with families, artisans, farmers, and tradesmen, as well as soldiers. True, it would be possible, and probably justifiable, to tell visitors that the little group of houses was some place out beyond the fort. But the equivocal wave of the hand in a general direction is certainly an unsatisfying substitute for a positive statement, particularly when the subject of the gesture is such an important aspect of the story.

It can be argued, of course, that the houses would not be reconstructed, even if definite building sites were found. A visitor to a historic shrine, however, does not demand, and often does not want, a full-dress show. But he is not satisfied with hedgings and reservations; he at least wants to know where the exact spot is, and prefers to stand on it. It would appear, therefore, that the search must go on.

Tradition and a perfectly good archeological relic notwithstanding, it would seem indefensible at this point to state without qualification that the original settlement was west of the excavated fort. Even less defensible would be the expenditure of a large sum to excavate too far in this general direction in search of the elusive townsite. It

becomes more and more like looking for a needle in the haystack, but as we spread out from the fort, the haystack gets bigger and bigger, while the needle stays the same size. Even so, some additional exploration in the vicinity of the fort is called for, and clearly warranted, particularly in the untested area across the highway from the historic site.

On all logical and documentary grounds, and in spite of negative results from previous testing, the area immediately to the west of the fort still seems the most plausible location for the settlement. It is proposed that at least one good trench should be excavated across the historic site, from the highway straight north to the shore of the sound, cutting through the dunes and even disturbing an occasional tree, if necessary. Any further trenching in this area must be of sufficient width to make certain that remains of a palisade would be recognized if encountered. In the previous testing, possibly too much consideration was given to preserving every tree and shrub. Wanton destruction is not advocated, nor is it necessary, but if the results are really worth the cost of archeology, then they are worth a little discreet disturbance of the natural scene.

In addition to the exploratory trench proposed above, some further testing near the fort will be possible when the development program for the National Historic Site is carried out. An interesting deposit encountered recently between the fort and the museum while running a waterline under the road should be examined. Certain sections that could not be tested before, such as the site of the log building housing the museum, will be available. Although the excavations in the area of the Elizabethan Garden were too limited for the negative results to be conclusive, extensive developments here preclude further exploration.

The area across the highway from the historic site would seem to offer the greatest possibilities of any untested ground, and very definitely should be given top priority in a future archeological program. If, in the course of carrying out future developments, it becomes feasible to explore under the present highway, this should also be done.

In addition to making a more thorough test of both the area between the fort and the Elizabethan Garden and the area across the highway, explorations in the Mother Vineyard-Baum Point section seem warranted. The exact location and extent of such test trenches would be determined from detailed study on the ground.

If none of the explorations proposed above produce positive results, the situation would seem relatively hopeless, and it is not recommended that the search be extended beyond the areas listed, unless surface clues that might come to light in the future so suggest.

It was stated earlier that one of the objectives of this reexamination of the evidence is to keep alive an interest in the subject and to make those concerned alert to possible clues. Such clues might appear in plowing, clearing of wooded tracts, new construction of roads and buildings, removal of earth from borrow pits, excavating drainage ditches, or from shore erosion. A second objective is to set reasonable limits for following up such clues, when and if they come to the attention of park officials. A great deal, of course, would depend upon the nature of the evidence, in addition to where on Roanoke Island it turned up. Although the west side of the island would seem to be out of the running, no clue from the entire northern end should be ignored. However, the site almost certainly was near the shore, as evidenced by the 1590 account. It would be reasonable, therefore, to consider seriously any evidence that might come from within a strip along the shore, say one-quarter of a mile wide, from the northwest tip all the way to Baum Point. Depending upon the nature of the evidence, archeological testing would be warranted anyplace within this zone.

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Appendix

Excerpt from Talcott Williams' report on his excavations at the fort site (Williams, 1895b, pp. 58–60). See pp. 3 and 14 for further information on Williams' work in connection with exploration and preservation at Fort Raleigh.

As a careful examination of the site seemed desirable, I made application to its present owner, the Roanoke Memorial Association, and from its president, Maj. Graham Daves, and its secretary, Dr. J. B. Bassett received prompt and cordial permission to conduct excavations. I was careful to avoid any disturbance of the embankment and its slope, the surface disturbed was carefully returned to its original condition, the site of each trench was carefully plotted and fixed by beatings and measurements, and a minute record kept and deposited with the association, so that no injury would be done to the site and no embarrassment caused to any future explorer by his inability to know where the soil was disturbed. In all, 13 trenches, most of them 5 by 3 feet, were opened and carried from 4 to 9 feet deep.

Water, it may be premised, is reached at 15 feet, and undisturbed sand at about 4 feet. Wherever trenches were sunk, and, it is fair to conclude, over the entire area, there was found a thin and undisturbed layer of sandy humus of 6 to 8 inches to a foot, then a layer of black, ashy earth, containing many fragments of charcoal and frequent fire pits. This layer rested directly on undisturbed sand, often penetrated by fire pits. If we imagine a forest surface from which the original humus had been removed to make an embankment, laying bare the sand below, this site occupied for a season and then for three centuries left to gather humus again, the condition revealed would be created. Toward the base of the black, ashy layer were found small pieces of iron, a corroded nail, a chipped piece of quartzite, and some small fragments of Indian pottery, networked. No one could reasonably expect to find any objects of importance on a site ransacked as this must have been, but I confess my surprise at the absence of small fragments, particularly of pottery. For a site occupied as it was, the place proved singularly barren of debris. Like its size, this circumstance has no ready explanation. The trenches opened were dug in three angles, the eastern, northern, and western—the southern being too much occupied by trees—across the center in two of the flanking bastions, and at other points where the surface was either above or below the normal level.

In addition, the embankment was sounded with an iron rod for a depth of from 3 to 4 feet at intervals of from 10 to 20 feet around the inclosure. The embankment may have had logs in it which have wholly decayed, but the indications were that it was heaped sand, the dark ashy layer curving over its slopes. Excavations were also made in the ditch and at various points in the woods, showing there an undisturbed surface and no remains of a layer of coal and ashes below the surface. The most plausible deduction which can be made from these sparse results is that the site was occupied at an early period by those using iron, succeeded by many years in which the forest did its natural work of making soil. As a corroboration of the tradition in regard to the site, this conclusion is important. In any other view the fruits were meager; but the fortune of excavation—of all pursuits of chance the most baffling and the most absorbing—may richly reward some successor with more time than the brief days I could devote.

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Created in 1849, the Department of the Interior—America's Department of Natural Resources—is concerned with the management, conservation, and development of the Nation's water, wildlife, mineral, forest, and park and recreational resources. It also has major responsibilities for Indian and Territorial affairs.

As the Nation's principal conservation agency, the Department works to assure that nonrenewable resources are developed and used wisely, that park and recreational resources are conserved for the future, and that renewable resources make their full contribution to the progress, prosperity, and security of the United States—now and in the future.